THE BUILDER

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G. B. Bankart's "The Art of the Plasterer: An Account of the Decorative Development of the Craft chiefly in England from the XVIth to the XVIIIth Century; with Chapters on the Stucco of the Classic Period and of the Italian Renaissance; also on Sgraffito, Pargeting, Scottish, Irish, and Modern Plasterwork"; W. R. Lethaby's "Greek Buildings Represented by Fragments in the British Museum"; A. Morley's "Strength of Materials"; G. A. T. Middleton's "The Drainage of Town and Country Houses"; "By-laws as to House-Drainage and Sanitary Fittings"; J. S. Brodie's "The Ventilation of Public Sewers"; W. R. Purchase's "Elementary Manual of Building Inspection, or, How to Become a Building Inspector"; W. J. Baldwin's "Baldwin on Heating, or Steam Heating for Buildings Revised"; A. G. King's "Practical Steam and Hot-water Heating and Ventilation"; M. W. Davies's "The Theory and Practice of Bridge Construction"; J. R. Baterden's "Timber"; J. Park's "A Text-Book of Theodolite Surveying and Levelling"; E. A. Atkins's "Practical Sheet and Plate Metal Work"; H. G. Richey's "The Building Mechanics' Ready Reference"; G. M. Harris and H. T. Wakelam's "The First International Road Congress, Paris, 1908"; H. R. Mill's "British Rainfall, 1907"; C. N. Pickworth's "Logarithms for Beginners"; J. T. Baily and S. Pollitt's "Woodwork for Schools on Scientific Lines: A Course for Class Work or Private Study"; E. Rowe's "Chip-Carving and Other Surface-Carving"; A. W. Lyons's "Grammar of Lettering; a Handbook of Alphabets systematically arranged for the use of Art Students, Architects, Decorators, Sign-writers, and all classes of Craftsmen"; G. C. Rothery's "Decorators' Symbols, Emblems, and Devices"; "Cassell's House Decoration"; "Where to Live Round London (Northern Side)."

MAGAZINES AND REVIEWS.

Illustrations.

POLICE COURT AND STATION, OLD-STREET, SHOREDITCH. MR. J. DIXON BUTLER, F.R.I.B.A., ARCHITECT.

CARNEGIE LIBRARY, THORNHILL-SQUARE, ISLINGTON. PROFESSOR BERESFORD PITE, F.R.I.B.A., ARCHITECT.

SUGGESTION FOR A LONDON BRIDGE WITH COVERED FOOTWAYS. BY MR. F. R. HIORNS, A.R.I.B.A.

"BUILDER" COMPETITION FOR A FAÇADE FOR A CLUB IN FERRO-CONCRETE. DESIGN HIGHLY COMMENDED. BY MR. C. W. PIKE.

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International Competitions.

THE last issue of the *Journal* of the Institute of Architects contains the Report of the British Delegate at the Permanent Committee on the conduct of International Competitions, which has been sitting at Paris. This is accompanied by a formal statement of the extent and manner in which the draft Regulations for such competitions, as agreed upon provisionally at the meeting at Vienna, had been modified by the meeting of the Permanent Committee at Paris.

International architectural competitions have seldom been very satisfactory in their working; and however much impartiality may be professed and honestly intended, it is almost a foregone conclusion that the design selected will be by an architect belonging to the nation on whose soil the building is to be erected. The California University competition was an exception, but the exception was a Frenchman, and in architecture the Americans are more French than the French themselves. In regard to the competition for the new façade to Milan cathedral we said at the time that no Englishman would be wise to spend his time over it, unless the interest of the design and of appearing in a competition of world-wide notoriety was sufficient reward to him, for he might be quite certain that the selection would go to an Italian architect; and the result showed that we were right. International architectural competitions, provided that there is an occasion important enough to justify them, are undoubtedly of great interest, and of value to architects; they bring together for comparison the work of architects of different nations, enable us to compare their methods with our own, and tend to modify our present insularity of taste in drawing, and this is something gained; for there is no doubt that we are insular in our architectural methods as well as in many other matters. There is much more similarity between German and French architectural drawings than between either of them and English drawings, and more solidarity between Continental architects in general than between English architects and those of any Continental nation. Hence, when an English architect enters into an International Competition to be settled by a jury of whom five out of six, perhaps, are Continental architects, he has hardly a chance of being selected, or even (as we saw in the case of the Palace of Peace competition) of receiving any recognition.

The point most discussed at the Paris meeting seems to have been the question whether the final competition (where there are two) should be anonymous, as it was generally agreed that the first or sketch competition should be. That it should be so was moved by the British delegate, who however could not obtain a single vote for it from the others; "signature of the final designs," he reports, "appears to be invariable on the Continent, and is regarded as a privilege." Most of the delegates held that anonymity was practically impossible to maintain to any purpose in the second stage of the competition; and that the desire for it was a kind of reflection on the character for fairness of the judges. It need not be regarded in that light, however; a juror may be quite honestly biassed in favour of the design of an architect for whose work he has a special admiration; he accepts the design as good because he believes in the man; it is an almost unavoidable tendency. As to the difficulty of preserving anonymity in the second competition, of course if the jury, after selecting the designs in the first and strictly anonymous competition, are given the names of those selected, and the second competition consists in most cases of the further working out of those designs, they must inevitably be recognised, or most of them. But it is quite possible to avoid this by leaving the correspondence in the hands of a trusted confidential secretary, who alone should know the names and correspond with the authors of the designs, keeping them entirely a secret from the jurors. We recommend this point for consideration at any future meeting of the Permanent Committee. Certain we are that the knowledge of the names and respective reputations of the architects in the second competition *must* influence the jurors, even without their own consciousness of it, and that decisions on a competition where names were known would in most cases be different from what they would have been if the names had been concealed.

Among other points in which changes have been made from the Vienna draft of proposed Regulations is one which errs only in not going far enough. The following was the original Clause 10:—

> It is desirable in International competitions, and especially in the preliminary stages, that the limit of cost shall be only approximately fixed in order to leave full liberty to the artistic conception of competitors.

This has now been altered by the

substitution of the words "some liberty" in place of "full liberty." The clause as it stood was preposterous; it constituted an encouragement to the indulgence of wild and impossible architectural dreams in place of sane and well-considered designs for the special object in view, as well as adding a great deal to the difficulty of making a selection of comparative merit. A man who ignores all considerations of cost of course has an immense advantage, in a competition, over those who keep a limit of cost before their minds. Even as the clause stands it is unpractical, and opens the way to the failure of the competition. Competing architects as a rule (and French architects even more than English) are prone enough to run into extravagance in their designs, without the support of a paragraph which gives them a kind of direct encouragement in that direction. It may not be necessary, in a competition of this class, to confine architects within a strict limit and to throw out all those who exceed it—it may indeed often be impossible to estimate very closely the cost of a great building in advance, when it is only *in nubibus;* but we do think that a definite sum should be named as a guide to competitors, with instructions to make out their design with the view to that limit; and that designs which palpably and intentionally ignore any such limitation should, even if exhibited, be ruled out of selection.

The Vienna stipulation that the conditions should be drawn up in one, and one only, of the four languages admitted at the International Congresses, viz:—English, French, German, or Italian, has been altered to a provision that French only should be made use of. This is much more sensible; French is undoubtedly the most generally understood language. The rule that drawings are to be dispatched on the day of the closing of the competition, the carrier's dated receipt (to be sent to the jury) to be the voucher, is altered in wording, to the effect that any design not, according to the receipt, dispatched on the day of closing of the competition, shall be excluded. One does not wish to suppose such a thing possible, but one cannot help reflecting that it is open to an unscrupulous competitor to get a signed receipt from a carrier at a certain date and delay the drawings a little longer. We really cannot see why competitors should not be required to have their drawings deposited by a fixed date; there is always a long time given for International Competitions on a great scale, and any man who means business will see that his drawings are delivered by the prescribed date. We have no sympathy with people who cannot get in their drawings in time; it is nearly always their own fault.

The condition that "no drawing or model shall be taken into consideration except those specified in the Conditions" has been strengthened (rightly) by the additional provision that it shall not, either, be exhibited, which is quite right; a competitor who exhibits superfluous drawings or models has, in the eyes of the public at all events, an advantage over those who keep within the schedule of requirements.

In regard to the subject of specifying the sum available for carrying out the building, a new paragraph has been added to Clause 10, to the effect that when the sum is stated, the Conditions of Competition should give the information required for preparing approximate estimates on a uniform basis: a most useful addition to the Clause.

In Clause 6 the second sentence, in the English version at least, requires amending; it reads:—"Designs selected in the first stage only can be admitted to the second stage." The word "only" is wrongly placed, and the sentence consequently ambiguous; the intended meaning obviously is that "Only designs selected in the first stage can be admitted to the second stage"; the wording ought to be rectified.

The conditions in the main seem to be well prepared and have evidently been the result of a good deal of thought and foresight. But we think the question of having the second competition anonymous ought to be reconsidered.

THE REGISTRATION OF ARCHITECTS.

By PROFESSOR BERESFORD PITE, F.R.I.B.A.

I AM quite willing to enlist the promoters and supporters of the Registration of Architects on behalf of any effort to restrain generally the practice of ignorant and unsafe building.

A movement for better education in building construction has grown up of recent years; and, throughout the country in technical classes, very effective steps are being taken generally to improve the practice of building. Perhaps, therefore, the time may have come for restraining from the exercise of building all who cannot satisfy some public inquisitors of their fitness to execute or specify the erection of buildings, for any public or private residential purpose, whether of brick, stone, iron, or ferro-concrete. On this question of the restraint of liberty other philanthropists may have somewhat to say, but, from the point of view of one who is committed to the art of good building, I would cordially support an effective restraint of bad building.

Legislation to effect this end would be justifiable on the ground of public safety, as involved in buildings alone, and not upon that of the consequent increase of employment accruing to the professional supervisors of building operations. The promotion of such restrictive legislation must proceed from those who have no private gain in its operation. In a multiplicity of connexions the disinterestedness of the architect is necessary to his professional authority and character; it is a quality difficult to preserve above suspicion in this present age, but its integrity at present is an asset, nominally, of the Royal Institute of British Architects.

It will clearly be intolerable that architects should be restrained from practice unless registered if engineers, surveyors, and the employees of corporations and companies, especially of building, decorating, and furnishing firms, are not similarly compulsorily registered. It is not architects, but architecture that must be restrained, and the registration of the nominal architect is not likely to diminish the already undue amount of architecture practised by those at present outside "the profession."

As already practically every building of any public or private authority passes within the jurisdiction of some metropolitan or local by-laws or enactments, exercised under some pseudo qualified surveyor or authority, the public have protection from the worst consequences of evil construction and design. The improvement of this sanction and executive authority is to be desired, and, I believe, is generally realised. Steady action towards this end by the Institutes of Engineers, Surveyors, and Architects will continue to avail for further improvement. Shortly, unless all who build or direct buildings are tested and qualified by legal authority it will be futile alike in the interests of the public, *i.e.*, architecture, or of our private selves, *i.e.*, architects, to obtain registration.

But supposing an examination of qualification for building to be within the sphere of practical politics, what could and should such an examination be? Solely directed to the public interest is the only possible answer. Besides sanitation I would sum it up in some such phrase as this: *The action of the law of gravitation upon combinations of building material.* In this subject, or group of subjects, knowledge attains scientific standards and demonstration. It is capable of clear methods of instruction and examination, and is admittedly valuable to the student because necessary to the public. Beyond this classification it is not possible to go.

The Institute of Architects as a professional body may be justified in insisting that its members should prove by examination their acquaintance with at least one foreign language, understand the difference between the Florentine and Venetian schools, and expound a "jube" or "respond," but as the subject of a statutory sanction to build soundly such an examination suggests Alice rather than Edward VII. Architects may like it and welcome it, but after all it is not architecture.

Examination in what passes as design would not be less misplaced than in the subject matter of architectural history-books, the whole a queerly uncertain and ill-related course for any student. The Institute has held for more than a quarter of a century a qualifying examination in design, but it has never dared (and it may be safely challenged to do this) exhibit the pass design with the candidate's nomination for election. I do not suppose that the Board of Examiners or the Council of the Institute would desire to maintain that the designs of the students, made as evidences of study, were such fit instances of their authors' qualification as to justify their infliction upon the world as statutory architecture. It will be an impertinence to art, unworthy of any cultivated race, to set up a legal qualification in the art of design of universal application in architecture. The attempt is doomed to distressing failure architecturally; that its impracticable absurdity is not evident to the promoters of

architects' registration is, I fear, due to an imperfect sympathy with that essential liberty of spirit which is the vital air of all artistic movement. Examination in the fine art of architectural design is impracticable for legal qualification, and must be struck out of any scheme of building regulation.

The effort has been made to confuse education in architectural design with this examination qualification for practice. I think that some want of acquaintance and practical sympathy with the work of education is the cause of this mistake. In my experience nothing is more trying to patience, to that consideration and estimation which should be cherished between my fellow-followers of our common art, than constantly to realise how the painstaking, earnest, interesting labours of a student in design fail to appeal to or obtain the suffrages of professional judges. In so many cases what I feel to be the best others condemn as worthless. To the teacher, because the process has been present, the result has its value—it is the fruit of seed sown, nourished, and cultivated to completion; and the whole operation of culture and growth has been one long continued interest, culminating in achievement; while to the assessors either the flavour of the fruit or the scent of the flower, being fresh and unexpected, is unpleasant, and the "examination" test fails utterly and desperately. I would venture to enter an earnest warning against assailing a teacher of design with the ready-made, cocksure assertion that, being compelled to test study by result, he perforce admits the right to admit or prohibit the practice of architecture by examination. I have before answered this claim by its logical result that the argument is admissible only if I am the judge; but I refuse this position personally, and decline to submit myself or advise any self-respecting student to submit his liberty to the final personal judgment of any statutory inquisitor of design.

Just a word as to the special position of provincial architects in the matter. It is not the fact that provincial architects suffer more from unqualified rivals than their metropolitan brethren. I believe that the proportionate bulk of building executed in London by unqualified men far exceeds the proportion in most provincial towns. The "country" architect has, I am convinced, on the whole an easier and happier time than the London man. His area, because smaller, may reveal more clearly rivalries which exist in greater volume in the world of London, but I fear he is less tolerant of the competition around him and somewhat narrower in professional sympathy than his more storm-buffeted brothers up here. And please let us hear no more in this controversy of this undiluted cant of the "seats of the mighty." There is nothing in any appeal to the leaders of the profession as such that does not appeal with equal force to the younger architects; the common interest is that of the art of architecture and the progress of education. The advent of registration, with its inevitable low standard of qualification (which cannot be higher than the Intermediate Examination for the Associate Royal Institute of British Architects), will be a death-blow to all higher aim for the general student. Education in the necessary elements of building art needs to be made more widespread, intelligent, and inspiring than at present; in this we all can help. Future developments are coming rapidly upon us, in ferro-concrete and other directions. Building art is becoming more progressive and responsive to new movements of social life and public work, and therefore more universal in its interest and practice. Education, not restriction, solves our present difficulties, and if compulsory education in building art is requisite for all who build, I am heartily in accord as an architect; but this is very different from either the programme or the outlook of the promoters of the registration of architects. And liberty and art are, after all, inseparable.

NOTES.

The Panama Canal. MORE than thirty years ago M. de Lesseps stated the opinion that unless the Atlantic and Pacific were united by simply piercing the Isthmus from sea to sea by a canal without locks, as at Suez, the project could not possibly be a commercial success. The principal reason then given was the inadequacy of a canal with locks to pass the traffic. More recently, the majority of the International Commission of Engineers appointed by the American Government decided in favour of a sea-level canal without locks, thus obviating all risk of disaster by earthquake, by the failure of a huge dam, or by the collision of ships with lock-gates, and also avoiding the fatal limitation of dimensions entailed by the employment of locks. Unfortunately, as we have previously pointed out, this wise recommendation was overruled by President Roosevelt and Congress, with the result that the American nation stand committed to a scheme of very inferior character. M. Bunan-Varilla, a well-known French engineer, has lately been trying to convince our American friends that they have made a great mistake. His view is that an open cutting between the two oceans, free from locks or any artificial works, is the only type of canal safe from the effects of earthquake and free from any limitations of the size of ships. The sea-level canal between Panama and Colon would be quite practicable and in every way desirable. If, even at this late hour, the American people could be brought to realise the error which has been committed and to insist upon an open waterway, they would confer an inestimable and lasting boon upon themselves and all the world.

Improvement Schemes and the Acquisition of Property. THE *Times* draws attention to a clause which has been inserted in the London County Council (Tramway and Improvements) Bill which will affect house property in many districts in London and to which the attention of owners of property should certainly be directed. The clause in question would enable the Council to sever the portions of the various properties required for their schemes without giving the owners the option of compelling the Council to take a greater part or the whole of such properties, but the Council must not take or interfere with the main structure of any building. The Council, it is stated, according to the deposited plans, do in certain cases intend to acquire the whole structure, so the above clause gives them power to exercise an option, whilst depriving the owner of the option to compel them to take over a property which he considers will be rendered unsuitable for his purpose by the removal of certain of its amenities. The Lands Clauses Act, a public statute, expressly reserves the right of exercising this option to the owner, and we have frequently pointed out the undesirability of the general law being altered in favour of particular interests by Private Bills. Michel Angelo Taylor's Act (57 Geo. iii. c. xxix.), which is a Private Act relating to land acquired for street widening, does not compel the authority acquiring land to take the whole, but the rights of the parties to acquire or retain the whole or part only of the premises have been decided in a long line of decisions, and the law under that Act is well understood. The whole question is dealt with in the *Times* of the 9th inst. very clearly, and we can only draw the attention of our readers to that article and to the question generally.

The Rebuilding of San Francisco. IN spite of the lessons taught by the recent earthquake and fire, buildings of unsuitable character are being erected wholesale in San Francisco. Structures embodying ordinary brick walls and steelwork suffered considerably from earth movements and were totally destroyed by the subsequent fire. Yet nearly 7½ millions sterling have been expended in constructing buildings of this class. Wiser members of the community have adopted either reinforced concrete or protected steel-frame buildings with armoured glass windows and other safeguards. These, however, are in the minority, the amount of about 3½ millions representing the outlay so far. In the outer regions timber-framed buildings are rising apace, as may be judged by the fact that the expenditure on this type of combustible construction is already well-nigh 9 millions. It seems a pity that unnecessary fire risks should once more be accumulated in a city which has surely had a fine opportunity of learning wisdom from experience, the best and most unpleasant of all preceptors.

Collapse of Another American Bridge. DURING the erection of a steel girder bridge across the Potomac River at Williamsport one of the spans suddenly fell, carrying with it a number of workmen and a travelling crane. The bridge includes several steel trusses with the collective length of 1,600 ft., these members being supported on slender concrete piers without reinforcement. From the evidence brought before the coroner it appears that at the time of the accident the concrete of the pier at one end of the truss which fell was not more than seven days old, and had evidently not hardened enough to justify its use as a support for the steelwork and erecting plant. Consequently the jury had little difficulty in

finding the contractors responsible for the collapse. We should very much like to know why some American and foreign constructors persist in taking unwarranted risks when dealing with concrete in an almost green condition. A little common sense would prevent the failures which are constantly reported in the technical Press.

Specifications for Engineering Works.

IN a paper read last week to the Civil and Mechanical Engineers' Society Mr. H. L. Butler puts forward in particularly clear language some of the points essential to the production of a specification which shall properly fulfil its intended purpose. Much that is said by the author applies also to architectural specifications, therefore we indicate a few of the faults attacked in his paper. A very common defect is indefiniteness of description, arising from lack of knowledge, obscurity of language, or the misuse of words such as "proper," "sufficient," and "etcetera"—the last being one that should never be employed. Legal jargon and high-sounding phrases are clearly things to avoid, while the repetition of words is to be commended if the practice enables the writer to express his meaning more clearly and forcibly. The specification of impracticable sizes of timber and metals generally results from inexperience, or sometimes from the use of obsolete or badly-written specifications as copies. The habit of naming the makers of materials and articles is one that should not be carried to excess. It always leads to discontent except on the part of the favoured makers, and frequently involves increased cost to the client. An even worse practice is that of specifying materials which must necessarily be transported from distant places, while equally satisfactory materials can be obtained near the site of the works. Besides pointing out defects, Mr. Butler's paper contains a good many suggestions which deserve consideration by young engineers and architects.

The London Institution and the Society of Arts.

IT appears that a very large majority of the Proprietors of the London Institution have voted for amalgamation with the Society of Arts; a scheme proposed some time ago and which we thought had been abandoned. We presume the respective societies know their own interests, though we cannot understand, in the face of the crowded audiences at the London Institution lectures, where one has to go early to get a seat, why the Institution wishes to end its separate existence. The important matter to us, however, is that of the buildings in which the two societies are respectively housed. Already it seems to be understood that a new building for the amalgamated bodies is contemplated, and it is proposed that the London Institution should be sold as a building site, which means the destruction of one of the finest library rooms in London. The house of the Society of Arts is the centre of the block built by Robert Adam, and contains the earliest attempt, in the modern era of art, at decorative painting on a large scale, by a painter famous at all events in his day. Is this building also to be destroyed, and the Adelphi laid waste? If so, one is tempted to say—"a plague o' both your houses."

Professor Herkomer on "The Philistine."

AT his third lecture on Painting at the Royal Academy Professor Herkomer undertook to say a good word for the "Philistine" in art; the average man with average taste. He thinks the Philistine not only a much more creditable but a much more useful person than the modern artist generally considers him to be. According to his lights he has freely patronised the Arts, and is to be differentiated from the Puritan who cannot abide a nude figure. And he thought artists themselves were to blame for their ill-disguised contempt for the middle line of intellect, on which they were dependent largely for their worldly reward, and also in offering to the public work which was often an outrage on taste; a conclusion we may certainly concur in when we look round the works at present exhibited in the New Gallery. There is a great deal of truth in Professor Herkomer's remarks—truth of a wholesome kind, which some of our younger artists would do well to take note of. But their reply will probably be that Sir Hubert is a Philistine himself; he paints rational pictures that are not ugly.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of the Architectural Association was held at No. 18, Tufton-street, S.W., on Friday last week, Mr. Walter Cave, President, in the chair.

The minutes of the last meeting and some nominations having been read and confirmed,

Mr. C. Wontner Smith, hon. secretary, made the following announcements:—

Meeting of Debating Society on January 15. Paper by Professor E. C. Alston on "Drawing from the Life: Its Value to Architects," at 7 p.m.

Annual Dinner of Camera and Sketching Club, to be held at the "Monico," on January 21, at 7 p.m.

First Spring Visit on Saturday, January 16, to Messrs. Selfridge's new premises in Oxford-street, by permission of the architect, Mr. R. Frank Atkinson. Members to meet at the building at 3 p.m.

The Life Class.

The President said that, arising out of the announcement of the paper by Professor Alston, he desired to draw attention to the fact that the Life Class which had been started had not sufficient members to justify its continuance, and unless more members joined it was doubtful if it could be carried on this session. The charges were very small, and it was absolutely necessary to have twenty-four members if the class was not to be carried on at a loss. At the present time he believed there were only seven members in the class.

Elections.

The following gentlemen were then elected as members of the Association, *i.e.*, Messrs. W. G. Newton (Kensington), W. J. Price (Ilford), and Mr. F. Surveyor (London).

Deceased Members.

The President said he had to ask them to support a vote of condolence to the relatives of two old members who were prominent men in the profession, *i.e.*, W. M. Fawcett and E. A. Gruning. Mr. Fawcett, as they knew, practised and did a great deal of good work at Cambridge, and he was an antiquarian of much renown. Mr. E. A. Gruning was for many years a member of the Association, and an old friend.

Mr. H. D. Searles-Wood said that Mr. Fawcett was for many years one of the most regular members of the Architectural Association excursions, and it was due to him, he thought, that the late J. D. Sedding became connected with the Association. Mr. Fawcett was a most sincere admirer of the Association, and a strong supporter of that branch of it relating to the Easter excursions to Italy and elsewhere, and the annual Summer excursions.

The motion was agreed to in the usual way.

Special Meeting.

The President also gave notice that a special general meeting will be held on the 22nd inst., a little before the next ordinary general meeting, to consider certain proposed alterations in the by-laws. The object of those alterations was to accelerate the movement of members on to the Council. The proposed alterations would be posted to members.

On the same date Mr. J. H. Markham would read a paper on "Reinforced Concrete," and Mr. Buckland's paper on "Schools," originally arranged for January 22, would be read on February 5.

Building Materials.

Mr. H. D. Searles-Wood then read the following paper on "Building Materials":—

Concrete for Foundations.

"Some interesting results as to the relative strength of concrete made with aggregates of broken brick and gravel respectively, and also with broken brick and gravel mixed in varying proportions, have been obtained from experiments instituted by H.M. War Department in connexion with the construction of a large building, for which it was calculated that a maximum weight of two tons per foot super. would be brought upon the concrete foundations.

The experiments were carried out by means of cubes of concrete 1 ft. by 1 ft. by 1 ft. mixed and put together under precisely the same conditions as occur in actual practice. The aggregate of broken brick or gravel was broken to $1\frac{1}{2}$-in. gauge, and mixed with a sufficient proportion of sand to fill the interstices. Briquettes of the Portland cement used for making the concrete were previously tested, and successfully withstood a tensile strain of 400 lb. per square inch of section after seven days' immersion in water. Four blocks of each of the following varieties of concrete were then made, viz.:—

A. Concrete composed of six parts cleaned broken bricks, one part sand and one part Portland cement.

B. Concrete composed of six parts uncleaned broken brick, one part sand and one part Portland cement.

C. Concrete composed of six parts broken stone, one part sand, and one part Portland cement.

D. Concrete composed of three parts of cleaned broken brick, three parts broken stone, one part sand, and one part Portland cement.

E. Concrete composed of four parts cleaned broken brick, two parts broken stone, one part sand, and one part Portland cement.

The bricks used for the aggregate were very old, rather soft, and easily broken, having pieces of the old mortar adhering to their surfaces in the remaining instances the old materials were roughly cleaned from mortar before breaking to the required gauge.

The concrete blocks were forwarded to Messrs. Kircaldy & Sons, and their actual resistance to compression ascertained after being allowed to set in air for thirty-one days. Each block was bedded between pieces of yellow pine, $\frac{3}{8}$ in. thick, before being tested.

The terms sand and gravel are a trifle indefinite, so for the sake of distinction all mixtures that will pass a sieve with a $\frac{1}{4}$-in. mesh is sand, and all that will not pass is gravel. Good authorities state that loose gravel of $\frac{3}{4}$-in. diameter and under contains about $33\frac{1}{3}$ per cent. of voids, which is reduced

to 21 per cent. by ramming. From this it can be seen that one part of sand will fill the voids in three parts of gravel, that is a mixture of 1 to 3. The percentage of voids increases somewhat with an increase in the size of the gravel, which would correspondingly decrease the above ratio. The gravel should be of different sizes varying from coarse to fine screened, or washed entirely free from clay, loam, or other foreign matter, and be free from scale, slime, or humus.

Gravel sufficiently clean can often be obtained from river beds or gravel pits, but rarely from gravel banks.

Gravel can be readily cleaned by sluicing. Sufficient water should be used to carry away all objectionable matter, including fine sand. As a rule, more cement is required in gravel concrete than in the same volume where broken stone is used; 10 per cent. is about the amount of extra cement that should be used in gravel concrete over and above that required with broken stone.

If the building is on a clay subsoil an excellent substitute for the layer of cement concrete over the site of a domestic building can be made by burning the clay and mixing the burnt ballast with gas tar whilst it is hot, the mixture can be left for some time till the brick footings are laid, and then it is spread over the site and well rammed and it will be found to be more impervious than the cement concrete.

Reinforced Concrete.

With the introduction of reinforced concrete building much greater attention has been paid to the methods of testing Portland cement and selecting the materials for the aggregate.

The following is from a report of the Materials Sub-Committee of the Reinforced Concrete Committee of the Royal Institute of British Architects:—

Cement.—Only Portland cement complying with the requirements of the specifications adopted by the British Engineering Standard Committee should be employed; in general the slow setting quality should be used. Reasons for this recommendation. The exclusion of concrete made with lime or natural cement appears desirable, not only because the term "reinforced concrete" is now generally applied to work in which only Portland cement concrete is used, but because the presence of unslacked particles of lime, and the uncertain results obtained from limes and natural cements, constitute an element of danger. Moreover, the lower resistance of the resulting concrete prevents the full strength of the reinforcement being utilised.

The slow setting quality is desirable, in that a certain time must always be required in putting the concrete in position and thoroughly ramming it, and a quick setting cement might set before these operations were completed, to the danger of the work.

The cement should be delivered on the works in bags or barrels bearing the maker's name, and the weight of the cement contained.

Every lot of cement delivered should be tested to make sure that it complies with the requirements of the standard specification before it is used. These tests may be made at the maker's works or elsewhere. In addition, the tests for soundness and time of setting which can be made without expensive apparatus should be applied frequently, and all cement rejected which fails to pass the tests. These tests are:—Gauge a small portion of the neat cement into a plastic mass with from $\frac{1}{5}$th to $\frac{1}{4}$th its weight of water, place this on a small piece of glass, slate, or enamelled tile (not porous), and allow same to set out of contact with the sun, draught, or vibration, and in a damp atmosphere, say, under a damp sack, so that the sack does not touch the cement. After the expiration of twenty-four hours place the set pat in a saucepan (preferably enamelled) with cold water, and bring same slowly to a temperature a little below boiling, and keep at same for about three hours. If the pat remains sound or shows only slight hair cracks, the cement may be safely used immediately. The setting time may also be noted by pressure of thumb nail on similarly gauged protected pats, when it will be easily seen whether the cement is a quick-setting or slow-setting one in accordance with what is required. The cement may be considered set when hard pressure with the thumb nail only makes a slight impression.

Sand.—The sand should be composed of grains of various sizes up to particles which will pass a $\frac{1}{4}$-in. mesh. Fine sand alone is not suitable. It should be clean and free from core, ligneous, organic, or earthy matter.

The value of a sand cannot always be judged from its appearance, and tests of the mortar prepared with the cement and the sand proposed should always be made.

Washing sand does not always improve it, as the finer particles which may be of great value to the compactness and solidity of the mortar, are carried away in the process. Sand which looks impure is not always unserviceable. It appears that freely divided particles of clay or loam which do not adhere to the grains of sand may improve the resulting mortar. It is, however, difficult to fix upon the actual amount of impurity which may be allowed, and the word "clean" is retained, calling attention to the fact that a certain degree of impurity is not prejudicial. The word "sharp" usually employed in the description of sand has been omitted, as it appears that the angularity of the grain which gives the quality of sharpness is of very little importance compared to the size and variation in size.

Gravel, or Hard Stone.—The gravel or hard stone should be clean and angular, varied in size as much as possible between the limits of size allowed for the work. In all cases material which passes a sieve of a $\frac{1}{4}$-in. mesh should be excluded or reckoned as sand. The maximum allowable size is usually $\frac{3}{4}$-in., which should be reduced to $\frac{1}{2}$-in. or less in thin floors or in columns. The maximum limit must always be such that the gravel or broken stone can pass between the reinforcing bars and between these and the centering.

The sand should be separated from the gravel or broken stone by screening. It was thought desirable to confine the recommendations at present to the use of gravel or hard, broken stone, as concretes of cinder, coke-breeze, slag, or soft stone are of much lower strength, and are comparatively little used in reinforced work.

The material to be used must, of course, be fixed in relation to the stresses allowed upon the material. As it is very necessary to have correct proportions for all the materials, it is advisable to screen the gravel.

The amount of cement to be added to the aggregate should be specified by weight. The weight of a cubic foot of cement for the purpose of proportioning may be taken at 90 lb.

The amount of cement in a cubic foot varies very much with the method of filling and the size of the vessel used, and the size of the volume used. The French standard measure is a litre, and the method of filling is through a conical riller having a sieve in the middle of it, and of which cone the nozzle is about 2 in. above the litre measure. Determined by this method, the weight of cement is usually under 1,100 grammes per litre, which is equivalent to 68.64 lb. per cubic foot, and there is little variation in repeated trials of the same cement.

If a larger measure than a litre is used, there is not only a greater weight per volume, but a greater variation in different weighings of the same cement in the litre measure, about 3 per cent. variation may be expected in a 50 litre measure; there might be as much as 13 per cent. even when carefully filled in by a standardised method.

In fixing the proportion between volume and weight the Committee had also to consider what had been generally understood by the expression "one of cement to one of sand." It appears that a 200 lb. bag of cement has been hitherto generally considered as the equivalent of rather more than 2 cubic ft., and that proportions are generally determined on the basis of 90 lb. per cubic foot. The German Engineers' and Architects' Association recommend that for mixtures by weight, 1,400 kilos should be taken as the specific weight of the cement. This is equivalent to 86·36 lb. per cubic foot.

The sand and ballast are also sometimes determined by weight. It is found that sand weighs from 85 lb. to 117 lb. per cubic foot, and the contents of a vessel containing a cubic foot of cement vary between the same figures according to the manner of filling.

The adoption of so small a measure as a litre, though giving a more accurate comparison between the weights of two cements, would make the equivalent mixture much leaner than has hitherto been understood.

The exact determination of the ratio between weight and volume does not appear of so much importance for proportioning as general agreement upon the meaning of such expressions as "one of cement to two of sand and four of gravel." The Committee therefore recommended that the cubic foot be taken as weighing 90 lb.

The proportion of sand to be added to the cement should be specified independently of the gravel, broken stone, or other aggregate. In general, the volume of the aggregate should be double the volume of the sand. There are two or three methods of

DIAGRAM I.—STRENGTH OF PORTLAND CEMENT CONCRETE BLOCKS TO RESIST COMPRESSION AFTER BEING ALLOWED TO SET IN AIR FOR THIRTY-ONE DAYS.

No.	Description of Concrete.	Weight lbs. per cube ft.	Slightly Crushed. Tons per sq. ft.		Crushed. Tons per sq. ft.	
A^1	6 parts cleaned broken brick, 1 part sand, 1 part cement	123	22·6		24·4	
A^2	Do.	115	17·9	17·1	20·1	20·0
A^3	Do.	124	12·0		18·1	
A^4	Do.	119	15·9		17·3	
B^1	6 parts uncleaned broken brick, 1 part sand, 1 part cement	124	20·3		21·3	
B^2	Do.	120	17·2	16·8	18·3	18·6
B^3	Do.	119	15·0		18·1	
B^4	Do.	118	14·7		16·7	
C_1	6 parts broken stone, 1 part mud, 1 part cement	137	15·6		17·1	
C^2	Do.	138	13·4	12·3	15·0	14·1
C^3	Do.	141	13·4		14·4	
C^4	Do.	139	6·7		10·0	
D^1	3 parts cleaned broken brick, 3 parts broken stone, 1 part mud, 1 part cement	128	18·1		19·4	
D^2	Do.	126	15·4	15·4	16·4	16·6
D^3	Do.	128	15·4		16·3	
D^4	Do.	126	12·9		14·1	
E^1	4 parts cleaned broken brick, 2 parts broken stone, 1 part mud, 1 part cement	124	14·3		16·3	
E^2	Do.	124	12·6	12·4	16·0	15·2
E^3	Do.	126	13·7		15·4	
E^4	Do.	126	9·1		13·3	

doing this. The American practice appears to be to give the proportion of cement, sand, and aggregate between colons—1 : 2 : 4 or 1 : 3 : 6. On the continent of Europe it appears usual to specify weight of cement in kilos : cubit metres sand : cubic metres aggregate, also between colons.

The metal used should be steel having the following qualities :—

(*a*) An ultimate strength of not less than 60,000 lb. per square inch.

(*b*) An elastic limit of not less than one-half the ultimate.

(*c*) An elongation of not less than 22 per cent. in the lengths stated below.

(*d*) Standing bending cold, 180° to a diameter of the thickness of pieces tested without fracture on outside of bent portion.

Test pieces should be planed or turned before being tested, except in the case of rounds less than $\frac{1}{2}$ in. diameter.

The elongation should be measured on a length of 8 in., except in the case of sections less than $\frac{5}{8}$-in. diameter, in which case the elongation should be measured in a length equal to eight times the diameter.

Before use the metal ought to be clean and free from scale or loose rust. It should not be oiled or painted, and a wash of Portland cement grout is desirable. Welding should in general be forbidden. If it is found necessary, the welding should be at points where the metal is least stressed, and it should never be allowed without the special sanction of the architect or engineer responsible for the design.

The requirements for the metal are those usual for mild steel, save that there is no upper limit of ultimate strength. This upper limit has been expressly included in order that a harder steel may be used when thought desirable, provided only that the elastic limit is correspondingly raised. It is the elastic limit which is the important one, as reinforced concrete beams usually fail when the stress in the steel slightly exceeds that limit. In cases where rods are too long to be in one length, it appears desirable to hook them or to overlap and bind them with wire.

In all cases the concrete should be mixed in small batches in accurate proportions on large, boarded platforms. The bag of cement containing a fixed weight forms a convenient unit, and gauge boxes of a size to contain the proportionate quantity of sand and gravel or broken stone to be added to the weight of cement contained in the bag should be used.

If one box is used to contain the proper quantity of sand and gravel or stone it may be divided by a mark on the box into two unequal parts, the lower part for the sand, which should be filled in first, and the upper part for the stone or gravel, which should be first wetted. When the materials are mixed by hand they are to be turned over and thoroughly mixed by shovels and rakes with long prongs until the colour of the cement is uniformly distributed over the aggregate. Sufficient water should then be added to ensure that when a ball of the concrete is made and pressed together in the hands the water comes to the surface. The reason for the concrete being mixed in small batches is that it can be used at once on the work ; when concrete is made in large batches some of it is almost certain to begin to set before it is used. Before the work is begun and during progress test pieces should be made of the cement, sand, and aggregate to be used in the work mixed in the proportions specified. These pieces should be either cubes of not less than 4 in. each way, or cylinders not less than 4 in. diameter, and of a length not less than the diameter. They should be prepared in iron or hardwood moulds and firmly punned with iron beaters. Not less than four cubes or cylinders should be used for each test, which should be tested by compression in a proper machine, the load being slowly applied. The average of the results should be taken as the strength, and should not be less than 2,500 lb. per square inch. Loading tests on the structure itself should not be made until at least two months have elapsed since the completion of the work. The test load should not exceed one and a half times the accidental load. Consideration must be given to the action of the adjoining parts of the structure in cases of partial loading. Tests of too severe a kind are calculated to permanently injure the structure, and are not desirable. Cracks may be more easily detected if the surface of the concrete is wetted, and this may be done while the load is on.

Mortar.

Up to a few years ago, the general opinion was that the addition of sand to calcined fat lime (although primarily added as a deterrent and to prevent shrinkage) had a chemical function, causing the formation of a hard silicate of lime. At the present time the opinion is that the setting of mortar made with pure fat lime and sand (or broken brick or similar material) is solely due to the drying of the lime and to the formation of carbonate of lime with the carbon dioxide in the atmosphere, and that no chemical action occurs between the sand and lime. The presence of powdered brick or sand merely allows of a greater number of air passages in the mortar, thereby facilitating the drying action and carbonising action of the atmosphere. The particles of lime also adhere more readily perhaps to the sharp fragments of brick or sand than they would to one another. In other words, the action of sand and similar substances on lime is purely physical, not chemical. If, however, the calcined lime is mixed in the present of water not with sand, but with silica in an "active" form, *i.e.*, amorphous, and generally hydrated or with a natural silicate which contains silica in an active condition, then it will unite with the silica and form a silicate of lime capable of withstanding the action of water to a certain degree. This resulting substance is called a pozzuolanic cement, and the great difference between a pozzuolanic cement and a Portland cement is that in the former the silicate of lime is formed after burning the lime by the addition of active silica, and in the latter the silicate of lime (and aluminate of lime) are formed during the burning of the lime at an extremely high temperature. There are several substances occurring abundantly in nature, mostly of volcanic origin, which contain active silica, such as pumice, tufa, trass, and pozzuolana, which last, for instance, contains about 60 per cent. of silica, over one-half of which is soluble or active silica capable of directly combining with the lime on the addition of water. Pumice sand is largely used on the Continent for making mortar. Experiments have been made with $\frac{1}{2}$ trass, $\frac{1}{2}$ cement, 3 sand, which gave a breaking weight of 333$\frac{1}{3}$ lb. per square inch at six months, and 343$\frac{1}{2}$ lb. at twelve months ; while the same cement mixed 1 cement, 3 sand, gave only 265$\frac{2}{3}$ lb. at six months and 230 lb. at twelve months. 7 trass, 1 cement, 3 sand, 7 gravel failed at 3,000 lb. per square inch, the same cement mixed 1 cement, 3 sand, 6 gravel, failed at 2,000 lb., both were tested at 100 days.

Pumice gravel is used as an aggregate for concrete when lightness is required ; the average crushing stress it stands is 536·63 lb. per square inch ; the specific gravity of this concrete was found to be .49 when dry, and 1.24 after twenty hours' immersion in water.

Brick Earths.

Bricks are made of burnt or baked argillaceous or clayey earth, and the quality of the bricks depends upon (*a*) the chemical properties of the earth ; (*b*) the preparation of the earth ; and (*c*) the different degrees of burning or baking.

The following is approximately the chemical composition of a good brick earth—silica, $\frac{3}{5}$, alumina, $\frac{1}{5}$, iron lime, magnesia, manganese, soda, and potash, $\frac{1}{5}$. Clay or silicate of alumina forms the bulk of brick earths. It possesses the property of plasticity when damp, but upon the application of sufficient heat it gives off its water, losing its plasticity, and becoming permanently rigid ; by no known process can its plasticity be restored. It contracts and warps during burning. Silica is present either chemically combined with alumina and water, or free in the form of flint and sand. Its presence in clays produces hardness, resistance to heat, durability, and it prevents shrinkage and warping. According to Dr. Rideal, refractory fire-clays are of two classes : (1) The silicate of alumina class, in which the alumina is about half the silica and the silica mostly in combined form ; (2) the silicious class ; in which silica predominates up to about 90 per cent., mostly in the free state, and the alumina is low.

Lime, when present in brick earths, acts chemically on burning as a flux, causing the particles of the bricks to unite, producing greater molecular strength, and in small quantities diminishing contraction. An excess of lime causes the bricks in burning to melt and lose their shape.

Magnesia and iron influence the colour of bricks. Clays often contain various salts and those containing a quantity of common salt when it is in excess it acts as a flux, causing the bricks to warp and twist, in addition to which such bricks absorb atmospheric moisture for a considerable time.

Very few brick earths are found in such a condition as to allow of their being used without some special preparation. They are practically classed as plastic or strong clays, loamy clays, and marly clays.

Plastic clays contain silica and alumina, but very little lime, magnesia, soda or other salts, and are known as pure clays. For the manufacture of bricks these clays require the addition of silica and lime.

Loamy or mild clays contain quantities of free silica, and are known as sandy clays. To these lime is frequently added. Marls or calcareous clays contain a large proportion of lime, make good bricks, and are frequently used without the addition of other substances.

Bricks.

The treatment of brick earths may be performed by hand or machine, and is :—1st, the preparation of the brick earth ; 2nd, the moulding ; 3rd, the drying ; 4th, the burning.

The chief methods of brick-making are (1) hand-moulded clamp-burnt bricks, commonly called stocks ; (2) the machine-made wire-cut kiln-burnt ; (3) machine-made pressed or hand-moulded kiln-burnt bricks. The ordinary process of brick making is so well known I will not describe it, but Messrs. Eastwood & Co. have recently set up a process for making what are known as slop bricks by machinery, which may be of interest.

The brick earth, which is a thin superficial layer of natural clay, is dug and mixed with water until the mixture is of the consistency of cream, it is then run down iron pipes a distance of more than a mile, and is run into set-backs or shallow tanks formed in the ground, where it is mixed with the ashes or fuel with which it is burnt. After remaining there until the mixture is the consistency of dough, it is conveyed to a machine, in which it is forced into a mould the shape of a brick, only larger to allow for shrinkage. (The clay generally shrinks about $\frac{1}{10}$th in all directions.) From this machine the brick is placed in an iron trolley and run into a kiln, which is 180 ft. long, and by means of machinery the trolley passes slowly through the kiln ; in twenty-four hours coming out at the other end of the kiln dried and cool enough to handle. It is placed on a second iron trolley and enters another kiln, 180 ft. long, in which the brick is raised to a red heat, and slowly allowed to cool as it passes in twenty-four hours to the other end of the kiln, when it is again cool enough to handle, and is taken and stacked ready to be carried away. This process does in forty-eight hours what takes by air-drying under

hacks and burning in clumps four months, and the percentage of waste in the first case is not more than 3 per cent., and in the clamp-burnt bricks 25 per cent. to 30 per cent.

Machine-made Bricks on the Fletton System.

The operation consists in clay-getting, drying, grinding, sifting, pressing and burning.

The clay, which is obtained from the Oxford clay formation and is a dense bluish-grey shale, is dug, dried on a drying-floor to expel superfluous moisture, and ground in a mill similar to a mortar mill, the receiver revolving and carrying the clay under the rollers. The bottom of the receiver is perforated, which allows the material when sufficiently ground to fall through as a coarse powder into a pit beneath. It is then elevated and shot into a revolving circular sieve, the material that is sufficiently fine passes through, the remainder is conveyed back to the grinding mill. The sifted powder falls into a hopper, from whence it is passed to the pressing machine, where by an ingenious arrangement it is measured off and passed under the die, when it is pressed into the form of a brick and removed automatically from the mould. The bricks are then placed on barrows and stacked in the kiln, which is of the Hoffmann type, and then burnt. The time from digging the clay to the stacking in the kiln need not occupy more than fifteen minutes; the time taken to burn the bricks usually occupies about three weeks. Bricks made by this process are being sold in the brickfields at 9s. per 1,000, though it is said that they cost 12s. 6d. per 1,000 to make. The danger of the process is that the Oxford clays contain many fossils such as ammonites, bellimites, etc., and the men who dig the clay are paid 1s. 6d. per bushel to pick out the fossils; those that are not thus taken out pass into the mill and are ground up with the clay, and on burning are made into free lime. When bricks containing these small particles of lime are built in walls the moisture from the mortar slacks the lime, and it expands and blows the bricks to pieces.

Sand-faced bricks are of a beautiful red colour and texture, often made by hand and pressed by machinery; they are kiln-burnt, and in selecting them great care has to be taken to see that they are sufficiently burnt; the rough test is to sound them, the well-burnt ones have a ring, while the slack-burnt ones sound dull.

Rubbers are similar bricks only always hand-made, and of a uniform colour and texture throughout; they can be moulded by cutting with a steel-twisted wire saw and filing; also they can be carved. They are made red and white, but the red ones are the more satisfactory.

Pressed bricks as a rule are made from stiff plaster clay, if white from gault; the red colour is due to oxide of iron, the white to lime, usually in the form of chalk. A new form of white brick is now being made by mixing lime and white sand and pressing the mixture in a mould; they are known as Acme bricks.

Glazed bricks are usually made from stone-ware clays, and are either salt-glazed, that is salt is thrown into the kiln to produce the glaze, or are dipped in a slip of specially-prepared clay when half-burnt, which produces a smooth china face.

Tiles.

The various forms of paving-tiles are made of stone-ware pressed in moulds, and either coloured by various oxides or the tiles are what is called enamelled or glazed when they are dipped in slip exactly like the glazed bricks. Encaustic tiles have a pattern sunk in them in which various slips are placed, and when fired these change to permanent colours, and beautiful examples are to be seen especially in old Spanish buildings. I have some good modern specimens here.

Of late years glass tiles have been largely used for wall surfaces, and there are many varieties on the market, the only differences in them consists in the method of preparing the backing by which they adhere to the cement which secures them to the wall, the great difficulty being to overcome the difference of expansion between the glass and the wall in varying temperatures. If this is not overcome the glass cracks and comes away from the wall, and many unfortunate examples can be seen in London; on the other hand the Central London Railway stations are splendid examples of this class of work.

Strength of Brickwork.

The Science Committee of the Royal Institute of British Architects carried out some experiments on the Strength of Brickwork, and the results which have been given from time to time in papers read at the Royal Institute have now been collected in book form, and can be obtained at the Institute. The bricks experimented on were London stocks, Gaults, Leicester red, Staffordshire blue, and Fletton. Single bricks, and in some cases half bricks, of each kind were tested, and also the lime mortar and Portland cement mortar, and similar bricks built in piers or walls were tested, and at the end of the book you will find a table of averages giving the rates between the crushing weight of the brick and the crushing weight of the pier or wall. The book contains all the facts connected with the experiments and illustrations of the piers and walls under pressure and after failure, so that anyone can work out for himself the different ratios that he may want in connexion with his own work; and the book is a very valuable record of an interesting series of experiments. I may mention that the building of the piers for series I. and II. was executed under the supervision at intervals of two members of the Science Committee, and a record of progress was kept so that the age of each pier at the time of testing could be ascertained. The piers were built by a large firm of contractors at day-work prices, and it is with regret that the Committee have to state that during the absence of the members, the bricklayers, finding the Leicester red and Staffordshire blue bricks very hard to cut, filled in a great portion of some piers with closers of London stocks. This for experimental purposes destroyed the value of these piers, and the committee were obliged to have fresh piers built, but it incidentally affords a sample of jerry work which goes on under conditions when it would appear impossible. A comparison between these faulty piers and those built under the clerk of works, affords some useful information, as it may be taken that similar scamping work occurs every day.

The subject of the standard size of bricks was taken up by the Science Committee in 1897, and a conference with representatives of the Institute of Civil Engineers and the Brickmakers' Association.

Standard Size of Bricks.

Now that the Royal Institute of British Architects has fixed the standard size of bricks it may be of interest to say a word or two on the subject.

The standard size is:—

1. The length of the brick should be double the width, plus the thickness of one vertical joint.

2. Brickwork should measure four courses of bricks and four joints to a foot.

Joints should be ½-in. thick, and an extra $\frac{1}{16}$ in., making $\frac{5}{16}$ in. for the bed joints to cover irregularities in the bricks. This gives a standard length of $9\frac{1}{4}$ in. centre to centre of joints.

The bricks, laid dry, to be measured in the following manner:—

A. Eight stretchers laid square end and splay end in contact in a straight line to measure 72 in.

B. Eight headers laid side by side, frog upwards, in a straight line, to measure 35 in.

C. Eight bricks, the first brick frog downwards and then alternately frog to frog and back to back, to measure $21\frac{1}{2}$ in.

A margin of 1 in. less will be allowed as to *A*, and a ½ in. less as to *B* and *C*.

This is to apply to all classes of walling bricks, both machine and hand made.

This size has been arrived at after a careful consideration of long lists of different sizes of bricks from all over the United Kingdom and Ireland, and as will be seen, it is about the average size of London stocks. It is hoped that the brick users in the North will come into line, although no doubt it will take some time for the builders who have been accustomed to the larger bricks to take up this smaller size.

On the other hand, many architects object to the standard of four bricks and four courses measuring 1 ft., and say that although they agree with the proportion of length to width because that is the only way that good sectional bond can be made, the height of the four courses does not affect the question of bonding, and they would like this left open, so that those who want five courses of bricks and five joints to the foot can have them. I think that it is obvious that the standard must fix all the dimensions of a brick, and that it would be very undesirable to leave the height out of the standard, but there is no reason that I can see why architects who want the thin bricks should not have them in spite of the standard if there was sufficient demand for fancy sizes. Brick-makers would, I presume, always be willing to make them to order, and in fixing the standard we have pointed out that it applies to walling bricks only as we thought it would be unwise to try and standardise facing bricks, at all events for the present.

The margin in the measurements is intended to allow for the difference between the walling and ordinary facing bricks, which most builders want the full bricks that measure 9 in. by $4\frac{3}{8}$ in. by $2\frac{11}{16}$ in., with the $\frac{5}{16}$ in. bed joint, and the minimum brick that measures $8\frac{7}{8}$ in. by $4\frac{5}{16}$ in. by $2\frac{5}{8}$ in. with the $\frac{3}{8}$ in. bed joint, would suit nearly all the usual stock-sized facing bricks.

The value of the standard to those brick-makers who have been making their bricks of the London stock size, and who have felt the unfair competition of those makers who have reduced the brick to lessen the cost of the carriage, will be that the bricks against which they have found it so hard to compete will now be brought up to a definite test, and will not be used where the standard is inserted in the specification.

There is another question that will have to be settled sooner or later, and that is the size of the frog. In some of the glazed bricks the frog has been so exaggerated that a section of the brick looks like the letter H; it is obvious that the strength of the brick is seriously reduced, and when used where there is much weight, or exposed to the effects of fire, the face flies off. In order to meet this it was suggested to try a brick with three 1 in. diameter holes, this would give $1\frac{11}{16}$ in. bearing on each side, and $1\frac{1}{2}$ in. between the holes; these holes would be also excellent for grouting up perpends and help the bricklayer in cutting closers. Whether this would be open to the same objection as the perforated bricks with the smaller sized but greater number of holes I am unable to say, but these bricks are apt to fly when exposed to the effect of fire and water. The size of the frog is a serious item, also now that so much brickwork is carried out with cement. The best form of frogs are the two square shallow sinkings, but for brickwork in cement bricks are often specially made without frogs.

It would be interesting to know what amount of success the various fancy forms of bricks that are brought out, a fresh one almost every year; the only place that I have ever seen them has been at the Building Trades Exhibition. It seems hard that so much ingenuity and time should be wasted, or perhaps not wasted, but at all events lost.

Stone.

Some few years ago Mr. Alan Munby drew up the following list of questions on building stones, and architects were invited to return

the form filled up, with a view to procuring a reliable reference on the subject of building stones; and the result was the presentation by Mr. Scorer of an interesting collection of building stone and information on the subject to the Architectural Association. The matter has not been carried on, but it is a pity that it should not have been worked out, as there is undoubtedly a great need for such information. The following is the list that was circulated :—

Description.
Name of stone and quarry and bed in quarry.
Geological formation.
Physical properties.
Sizes obtainable, depth on bed, specific gravity (green, dry).
If a freestone.
Nature of laminations.
Nature of flaws.
Colour.
Porosity.
Structure (regularity and size of grain).
Strength under cross strain.
Uses.
Chemical properties.
Composition : Per cent. of silica, calcium carb., magnesium carb., iron and aluminium oxides, water.
Slate (green or dry).
Action of dilute acids.
Financial.
Price per cube ft. random blocks at quarry.
Masons' local wage.
Price F.O.R. nearest station.
Price at London terminus.
Experience in use.
Buildings in London when new.
Buildings in country when new.
Report on condition in building.
Name.
Address.
Date of erection.
Situation of stone.
Aspect.
Atmosphere.
Date of inspection.
Descripton of condition.
Reference to literature giving experience scientific tests, etc.
Remarks.

Structure can only be studied by microscopic sections, of which there are a good many at the Geological Museum, and a proposal to form a students' collection of building stones giving all the information set out on this form was entertained.

Strength Under Cross Strain.—Stone is a weight carrier with little transverse and less tensile strength. Use it, therefore, freely in compression, with caution in lintels, and never in tension. Bring pressure upon it at right angles to its natural bed, or in the case of slate to its line of cleavage.

Uses.—A careful study of stone is necessary to know what are the purposes each is best suited for. In London Portland stone is considered the best, and other limestones, such as Bath, etc., are frequently used. The sandstones of Yorkshire and Forest of Dean are mostly used for landings and steps.

Chemical Analysis.—The value of this is the indicative it gives of the lasting properties of the sample in sandstones, the nature of the cementing material which holds together the particles of silica is of all importance.

The sulphuric acid found in the atmosphere of large towns, the carbonic acid in the country atmosphere, will ultimately decompose any stone containing a large part of either carbonate of lime or carbonate of magnesia.

The oxygen of ordinary air will act on stone containing much iron. The average humidity of the neighbourhood in which the stone is to be used is another point, as the destructive acids penetrate more deeply into a wet than a dry stone, and the frost has a greater effect. The position of the stone also has a bearing on the question, stones that are always in the shade and never dried by the sun decay most rapidly.

Any stone exposed to very different degrees of heat on its different faces is liable to crush from unequal expansion and contraction, and for this reason stone buildings are not so fire-resisting as brick buildings, and in the tariff regulations for insurance are charged for accordingly.

The readiness with which stone can be converted into the various shapes in which it is required for different kinds of work will depend in some cases upon its hardness, but will also be influenced by the soundness of its nature, by its freedom from flaws, and also by its natural cleavage. A soft stone of even grain and without distinct beds would naturally be selected for carved work, while a hard stone in thin layers easily separated would be well adapted for building good and economical rubble masonry.

In the pediment to the new Government offices recently built in Parliament-street, where intended to be carved, in order to keep the joints in such position as they may interfere least with the carving, blocks of stone weighing 7 tons had to be hoisted 120 ft. into the air and moved about on the scaffolding. When these were fixed in their place it is reckoned that the sculptor cut away 50 tons of stone to produce the carving.

Hardness.—The hardness of stone is often of importance, but it does not follow because a stone is hard that it will weather well. Many hard stones are more liable to atmospheric influence than those of softer texture whose chemical composition is of more durable nature.

Wood.

The structure of wood affords the only reliable means of distinguishing the different kinds. Colour, weight, smell, and other appearances which are often direct or indirect results of structure may be helpful in this distinction, but cannot be relied upon entirely.

Structure underlies nearly all the technical properties of timber, and furnishes an explanation why one piece differs as to these properties from another.

Structure explains why oak is heavier, stronger and tougher than pine, why it is harder to saw and plane, and why it is much more difficult to season without injury. From its less porous structure alone it is evident that a piece of a young and healthy oak is stronger than the porous wood of an old or stunted tree, or that Georgian or long-leaf pine excels white pine in weight and strength. Keeping especially in mind the arrangement and direction of the fibres of wood, it is clear at once why knots and cross grains interfere with the strength of timber.

Timber is furnished by two well defined classes of trees: the needle-leaved naked seeded conifers (pines, cedars, etc.), and the broad-leaved trees (oak, poplar, etc.). The first are commonly called evergreens, the latter are known as deciduous trees. In the timber trade the woods of broad-leaved trees are known as hardwoods, and the needle-leaved trees as "soft woods."

In the manner of growth both conifer and broad-leaved trees behave alike, adding each year a new layer of wood, which covers the old wood in all parts of the stem and limbs. Thus the trunk continues to grow in thickness throughout the life of the tree by additions (annual rings) which in temperate climates are, barring accidents, accurate records of the tree.

Examining a smooth cross section or end face of a well-grown log of Georgian pine, you can see an envelope of reddish scaly bark, a small whitish pith at the centre, and between this the wood in a great number of concentric rings. A zone of wood next to the bark, one to three or more inches wide and containing thirty to fifty or more annual rings, is of lighter colour; this is the sap wood, the inner or darker part of the log being the heart wood. In the former many cells are active and store up starch and otherwise assist in the life processes of the tree, although only the last or outer layer of cells (the cambrium layer) forms the growing part and the true life of the tree. In the heart wood all cells are lifeless cases, and serve only the mechanical function of keeping the tree from breaking under its own great weight or from being broken by the wind. The darker colour of the heart wood is due to infiltration of chemical substances into the cell walls, but the cavities of the cells in pine are not filled up as is sometimes believed. Sap wood varies in width and in the number of rings which it contains, even in different parts of the same tree the same year's growth which is sap wood in one part of a disk may be heart wood in another. In a pine 250 years old a layer of wood or annual ring does not change from sap wood to heart wood until seventy or eighty years after it is formed, while in a tree 100 years old or less it remains sap wood only from thirty to sixty years. Occupying the peripheral part of the trunk, the proportion which sap wood forms of the entire mass of the stem is always great. Thus even in old trees of long-leaf pine the sap wood forms about 40 per cent. of the merchantable log, while in young trees the bulk of the wood is sap wood. Holding a well-smoothed disk $\frac{1}{8}$-in. thick towards the light it is readily seen that pine wood is a very porous structure. If viewed with a strong magnifier the little tubes especially in the spring wood of the rings are easily seen, and their arrangement in regular, straight radial rows is apparent. Scattered through the summer wood portions of the rings numerous irregular greyish dots (the resin ducts) disturb the uniformity and regularity of the structure. Magnified 100 times a piece of spruce presents a picture like that shown in the diagram. The total length of these fibres is $\frac{1}{20}$ in. to $\frac{1}{5}$ in., being smallest near the pith and is 50 to 100 as great as their width. They are tapered and closed in at their ends, and thin walled with a large cavity or internal space in the spring wood, while they are thick walled and flattened radially with the internal space much reduced in the summer wood. The flattening, together with the thicker walls of the cells, produces the greater firmness and darker colour—that is to say, there is more material in the same volume.

The dark lines on the side of the smaller piece appear when magnified as tiers of eight to ten rows of cell lying in vertical radial planes, and are seen as bands in the radial face. These bands are the "medullary rays," and are common to all timber woods. In the pines they are quite small, but they can be readily seen even without a magnifier if a radial surface of split wood (not smooth) is examined. The entire radial face will be seen almost covered with these tiny structures, which appear as fine but conspicuous cross lines. The cells of the medullary rays are smaller and very much shorter than the wood fibres, and their long axis is at right angles to that of the fibres.

The large vertical resin-ducts are best observed on the removal of the bark from a fresh piece of white pine cut in winter, when they appear as white lines. Neither the horizontal nor the vertical resin-ducts are vessels or cells, but are openings between cells, that is, intercellular spaces in which the resin accummulates, freely oozing out when the ducts of a fresh piece of sap wood is cut. They are present only in coniferous woods.

The Anatomical Structure of Broad-leaved Trees.—On a cross section of oak the same arrangement of pith and bark sap wood and heart wood may be seen, and the same disposition of the wood in well-defined concentric rings, but the rings are marked by lines or rows of conspicuous form or openings which occupy the greater part of the spring wood, and are, in fact, the openings through the vessels cut by the section. On the radial section the several layers appear as so many parallel stripes in the tangential face; patterns similar to those mentioned for pines are seen. But while the patterns in hard pines are marked by the darker summer wood, and are composed of plain alternating stripes of darker and lighter wood, the figures on oak are due chiefly to the vessels, those of the spring wood being the most conspicuous, so that the darker shaded parts are the spring wood, the lighter parts the summer wood. Scattered through the radiating grey patches of porous wood are vessels similar to those of the spring wood, but decidedly smaller. These vessels are usually fewer and larger near the spring wood, and smaller and more numerous in the outer portion of the ring. Their number and size can be used to distinguish the oaks classed as white oaks from those classed as black and red oaks. The summer wood, except for these radial greyish patches is dark-coloured and finer. This

finer portion, divided into bodies or strands by thin patches of porous wood, and also by fine wavy concentric lines of short, thin-walled cells, consists of thick-walled fibres, and is the chief element of strength in oak wood. In good white oak it forms one half and more of the wood; it cuts like horn, and the cut surface is shiny and of a deep chocolate-brown colour. The large medullary rays in oak are often twenty and more cells thick, and several hundred cells in height."

The Chairman, in inviting discussion, said they had had a very interesting paper, but he had to plead to a slight feeling of indigestion in regard to it.

Mr. W. Henry White, in proposing a vote of thanks, said the question of materials was, perhaps, not quite so fascinating to the younger members of the profession as that of design, but it was of very great importance to them and their clients. When the student went into practice it was upon the practical knowledge he possessed that he would be able to steer clear of the pitfalls which year by year became increasingly numerous. Every opportunity should be taken by all of them to collect data and to make such tests as they could in regard to materials. In actual practice cases of litigation were becoming more and more frequent, and even experienced architects found it necessary to pay special attention to the subject of materials. In making visits to buildings, both in connexion with the day schools and on the Saturday afternoon visits, students should carefully note and examine all materials which came under their notice and make experiments themselves, if possible. He could mention a little incident showing the value of a simple experiment. Some time ago a case came before him where a question of plastering was under discussion, and the client called another builder in, who condemned the first man's work. This second builder also called in a surveyor to support him, and the surveyor agreed that the work was bad, and said that a certain sand was used in the plaster. He (the speaker) asked the surveyor how he knew that the sand was bad, and the reply was:—"It is obviously bad sand because the plastering has failed." He was then asked if he could not suggest a physical reason for its failure, but could not. He asked the surveyor if he would not like to show him the sand in the plaster, and was again informed that he could not do so. He (the speaker) then made experiments before the eyes of the surveyor, and in about twenty minutes he showed him the sand and the lime, and the surveyor had to agree that the sand was not the sand he thought had been used, and that it was good. That was a practical illustration of the value of making experiments, which all of them could carry out, and they could get specimens of other materials for testing purposes. The difficulty often found in practice was to know when to condemn materials; it was easy to pass the best materials, but cases arose which tested their knowledge much more when they had doubtful materials before them, and all of them would know that, when they had had actual experience on works. It was impossible for the lecturer to touch on all materials, but he had given them much to digest; and in a precise form a lot of information which would take them much time to get from text-books, and the paper would be very valuable to them in its printed form. The practical examination of materials was left too late in life—until the time they were engaged in practice, when they wanted knowledge to be able to make a decision on the spot or before an arbitrator in such a way that a decision or opinion would carry weight and would show that they understood what they were speaking about. That could be done only by the handling of materials and ascertaining for themselves what was best by tests and careful notes and observations.

Mr. Matt Garbutt seconded the vote of thanks, and said that Mr. Searles-Wood had dealt chiefly with concrete and its constituents, and he must have had ferro-concrete on his mind a great deal lately. In speaking of the aggregates to be used in concrete he referred to the point which, to a ferro-concrete man, was most important—the strength of the aggregate; but he did not say that some of the materials he mentioned, such as cinder, coke breeze, etc., were extremely dangerous for reasons other than want of strength. He referred also to the desirable test load as not being more than one and a half times the accidental load. He (the speaker) believed that that was sometimes put in in specifications, and he thought that some reference should be made in a general paper of the sort now under discussion to the factor of safety, which modified some of the relations of the accidental load—*i.e.*, the load on a floor in addition to the weight of the floor itself—and the test load. Suppose a factor of safety of 3 was used, then one and a half times the working load would be about half the ultimate load of the structure. Anything above that would be too high. If they loaded a structure beyond its elastic limit for any great length of time it would fail, and that was illustrated in many old buildings, especially in brickwork. There were many buildings of a hundred years ago which had not fallen, but which had been failing all the time; and little vertical slits and cracks could be seen in the lower walls which showed this; time alone was needed to bring them down without outside aid. As to the use of cement to the exclusion of lime in concrete, Mr. Searles-Wood had spoken from the point of view of the ferro-concrete man, who wanted to know what would happen to a structure during its first years of life with as much precision as possible. They could not prophesy quite so well from this point of view when lime concrete formed a considerable part of the structure. On the other hand, in structures where concrete was wanted in some mass, and that were not ferro-concrete structures, lime had advantages. It was much cheaper if wanted in bulk than Portland cement, and experiments had been made lately—he thought Mr. Searles-Wood had seen them—with trass and fat lime and various aggregates, which showed that concrete so made was excellent and improved with age. They were, in fact, like some of the old Roman mortars in their behaviour; for practical purposes they lasted for ever. He did not know whether chemists were yet absolutely satisfied as to the real permanence of Portland cement. He had heard questions, and he supposed that time only could settle the matter. In speaking of the preservation of iron in concrete, old illustrations were sometimes given, but it was not always mentioned that in those cases the material used must have been hydraulic lime of some sort; it was not Portland cement, nor was the embedded metal steel. The chain round the cone of St. Paul's Cathedral was a case in point. The point that Mr. Searles-Wood made as to the particles of lime in certain bricks was one to which the young architect could not pay too much attention. If they saw white specks on the bricks, the safe policy was to reject them. They might be harmless, but if the spots were lime spots they might make holes in the face-work, and worse than that; in the building referred to in the paper, some bricks swelled up so that the intervening bricks could be pulled out with one's fingers.

Mr. H. W. Pratt said he had been particularly interested in one part of the paper, *i.e.*, as to brickwork. An architect had to do with bricks, more or less, in whatever building he put up, and the difficulties would hardly be realised until one had to deal with them. In regard to standardising of bricks, he took it that the manufacturers had been approached with the idea of trying to get them to produce a material of certain standard size and put it on the market. We had heard of standardising for some years now, but as far as he could tell, nothing of the sort had been carried out, or only to a very limited extent, judging from the bricks brought on to one's works, or when shown to one in selecting. The principal difficulty he had found when dealing with bricks of different sizes was when they had facework to do on both sides, for it was difficult to get good work when they had a tight joint one side and a thick joint the other, in order to bring things together. There was work in which some architects and others liked to get the picturesqueness resulting from the unevenness in brickwork, but clients generally did not care for that. Standardising of bricks would be of some advantage, but was there not a difficulty, not to say an impossibility, in getting bricks to work to a given size unless they were machine-made? Handmade bricks coming from the same yard, and the same stack, showed considerable variety in size, especially in thickness, and standardisation would be a very difficult matter. Even the manufacturer himself would not pretend to make all his bricks the same size, even to ⅛ in. variation. He should have liked to hear some comparisons between handmade bricks and pressed and machine bricks, with some information as to their advantages and disadvantages. He had never liked the pressed bricks, but one's clients liked the fine surfaces and the regularity of them. But there was so much sameness and tameness about those bricks, as a rule, that it was difficult to like them. Machine bricks were now made in imitation of handmade and sand-faced bricks, and he had seen some decent specimens, and it was difficult to tell whether they were handmade or machine-made, except in the matter of shape. He should like to know if Mr. Searles-Wood had seen a brick made from a German patent—a brick which, instead of being a baked brick, was a boiled brick. It had an exceedingly good texture, was made in several colours, and was of good shape. It was being made under royalty, he believed, in this country, but he did not know to what extent. In the Reading district there were a large number of bricks of this kind used for external as well as internal purposes; it was said to be a good weathering brick.

Mr. H. A. Satchell said that it seemed to him that it was more important for students to study materials in their early days than to study design even, for when they went to their clients the design would speak for itself, while the materials would not. There was nothing more important to a man when he commenced practice than to be able to speak to a client about the pros and cons of materials in a reasonable way. Clients asked for certain materials, and it was unfortunate for an architect if he couldn't meet the wishes of the client, or give good reasons for not doing so, especially if the client was a lady; but if he could show by experiment, or by a clear statement, that the wishes of the client could not be carried out, he could generally have his own way. It was experiences of that kind that showed the importance of storing one's mind with facts and knowledge in one's student days, for there was little or no time afterwards. As to the Eastwood bricks, he visited, with others, the brickfields, and the promise there was most encouraging; the trouble had been the colour, but that may have been overcome. It was claimed that the bricks could more than compete with stocks, but they did not seem to have caught the market, and he should like to know why. He had been told that the machine-made sand-faced brick was what manufacturers wanted to get, but the difficulty was to release the brick from the mould, and the appliances now used were difficult to manipulate. Flettons started with a good character, and it was a question whether their reputation had deteriorated very much. Possibly the boom of the last few years affected them, when the demand for bricks overtook the

supply. When the Broomhall tiles came on to the market about thirty years ago they were then one of the best tiles for durability to be found, and he knew tiles of that period and make which were perfectly good; but the patent ran out, and everyone made them, and now they did not last as they formerly did. It might be the same with the Fletton bricks. The question of double frogs was most important, since they took a large part of the bearing surface from the brick, which it was difficult to replace with mortar on the underside. It was disheartening to think that even the Science Committee of the Institute could not get work properly carried out when it was left to the workmen.

The Chairman said they would be glad if Mr. White would tell them how to carry out the experiment with plaster to which he had referred, for it was the plastering work in the building about which they so often had trouble.

Mr. White said he had to thank Mr. Searles-Wood for being able to do the little experiment himself. If they took a piece of old plaster and pounded it up as fine as they could, and mixed it with water in a glass, shook it and stirred it for some time, then the sand would settle and the lime would float at the top; the coarse sand would be at the bottom, the finer sand would come next, and the lime at the top. That would not happen with cement, but they could do it with lime, and it was a simple experiment which enabled them to say whether they had the right proportions, and whether they had hair in the plaster or not. It was one only of some interesting experiments which could be made by the students for practice.

The Chairman, in putting the vote of thanks to the meeting, said he did not agree with Mr. Pratt about the inequalities of bricks, for he thought uneven brickwork was charming. He agreed with Mr. Satchell as to the great importance of being able to answer clients in a satisfactory way about materials. The study of Mr. Searles-Wood's paper when in print would be of much help to all of them, for it was only by the careful study of such matters that they could hope to do successful work.

The vote of thanks was then heartily agreed to.

Mr. H. D. Searles-Wood, in reply, said it was exactly thirty years since he read his first paper on materials before the Association, and it had been a pleasure to come and speak to them on the same subject once more. As to the use of lime-concretes, on the Continent lime-concrete was used for purposes where we hesitated. Lime-concrete should be used as a mass substance; it was not put to strains in the ordinary way, and where they had concrete used as a mass substance they could not do better than make it in lime if they had time for it to set.

The meeting then terminated.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Grant of the New Charter.

AT the last meeting of the Royal Institute of British Architects, the Chairman (Mr. Edwin T. Hall, Vice-President) said he had much pleasure in announcing that the labours which the Council and the general body had been engaged in for many years had at last resulted in fruition. The Institute solicitors had received a letter from the clerk of the Privy Council announcing that His Majesty had been graciously pleased to approve the new charter.

The Fellowship Question.

The first of the members' notices printed on the agenda for the same meeting was the following:—"Mr. Max. Clarke to ask the ages of the gentlemen nominated at the meeting of November 2 for election as Fellows, but afterwards withdrawn from candidature."

After some discussion, and the expression by Mr. Clarke of his satisfaction at the answers given, another resolution, by Mr. G. E. Neild, was considered, *i.e.*:—"That the Fellows and Associates of the Royal Institute of British Architects demand, as due to them, a full and satisfactory explanation from the Council, or its responsible officers, of the circumstances leading up to the proposed suspension of part of By-law 9, and direct that in future no such motion shall be moved. They condemn such proceedings as that attempted, and consider it unworthy of the Governing Body of the Royal Institute."

After discussion, Mr. Neild withdrew his resolution, it being understood that the matter would be dealt with when considering by-laws under the new charter.

Appointments.

Sir Wm. Emerson (Past-President) has been reappointed by the Council to represent the Institute on the Governing Body of the University of Liverpool for the term of three years provided by the Charter and Statutes of the University.

The Académie Royale d'Archéologie de Belgique has conferred the honour of Foreign Corresponding Membership on Count Plunkett.

Mr. J. C. S. Mummery has been nominated for a third period of office as President of the Royal Photographic Society.

The Royal Gold Medal, 1909.

The Council will on Monday, February 1, announce to the general meeting the name of the person they propose to submit to His Majesty the King as a fit recipient of the Royal Gold Medal for the current year. Members of the Institute desiring to suggest names for the consideration of the Council should do so in writing to the Secretary, Royal Institute of British Architects, prior to the 18th inst.

Prizes and Studentships.

Works have been received for the Institute Prizes and Studentships 1908-1909 under motto, device, or signature, as follows:—

The Institute Silver Medal and Twenty-five Guineas (essays). Subject, the influence on architecture of modern methods of construction (nine designs).

The Institute Silver Medal and Ten Guineas (drawings). Subject, measured drawings of ancient buildings in the United Kingdom or abroad.

1. "Antiquis Debetur Veneratio": 6 strainers (Royal Infirmary, Glasgow); 2. "Cistercian": 6 strainers (Fountains Abbey); 3. "Erectheum": 5 strainers (St. Pancras Church); 4. "Esse Quam Videri": 5 strainers (Emmanuel College, Cambridge); 5. "Flint": 5 strainers (Lavenham Parish Church); 6. "Metopemania": 6 strainers (Royal Naval College, Greenwich); 7. "Persiste": 6 strainers (Horham Hall, Thaxted, Essex); 8. "San Gallo"; 6 strainers (church of the Madonna di San Biagio, Montepulciano); 9. "3": 6 strainers (St. Martin's Church).

The Soane Medallion and 100*l.* (for Continental travel). Subject, design for a casino on the borders of a lake (ten designs).

The Owen Jones Studentship: Certificate and 100*l.* (for travel, and study of colour). Application and drawings from S. Herbert Maw (six strainers).

The Pugin Studentship: Silver Medal and 40*l.* (for travel in the United Kingdom). Sets of drawings from:—

1. John L. Berry: 4 strainers; 2. A. G. Blackford: 4 strainers; 3. H. Hubert Fraser: 4 strainers; 4. L. McD. Gill: 4 strainers; 5. Frank Hearne: 4 strainers; 6. Percy May: 4 strainers; 7. Sydney H. Miller: 4 strainers; 8. A. D. Robinson: 4 strainers; 9. Frank W. Smith: 9 strainers.

The Tite Prize: Certificate and 30*l.* (for travel in Italy). Subject, design (according to the principles of Palladio, Vignola, Wren, or Chambers) for a covered arcade of shops (twenty-one designs).

The Arthur Cates Prize: Forty Guineas. Drawings have been received from Leslie Wilkinson (six strainers).

The Grissell Gold Medal and Ten Guineas (for design and construction). Subject, design for a landing-stage to a royal palace from a lake (nine designs).

Godwin Bursary: Silver Medal and 65*l.* (1) J. A. Allan (five strainers); (2) Dixon Spain (six strainers).

THE SURVEYORS' INSTITUTION:

THE ADMINISTRATIVE ASPECT OF SEWAGE DISPOSAL.

AN ordinary general meeting of the Surveyors' Institution was held on Monday at No. 12, Gt. George-street, Westminster, S.W., Mr. Howard Martin, President, in the chair, when an adjourned discussion took place on a paper by Mr. H. T. Scoble, read at the meeting of the Institution on November 23 last, on "The Administrative Aspects of Sewage Disposal."

The discussion was continued by Mr. R. E. Middleton, who said there was a tendency to make the question of sewage disposal, and the dimensions of the works used, a matter rather of rule of thumb than of calculation. This no doubt was due to some extent to the regulations laid down by the Local Government Board. The effect of any such tendency to formulate the dimensions of sewage disposal works was injurious to the country generally. It tended to the construction of works which did not carry out their duty satisfactorily, and on which large sums of money had to be expended for their rectification. There could be no doubt of the desirability of altering the constitution of the bodies which dealt with water works, sewage, and the pollution of rivers, but he thought he should go further than the author of the paper in specifying what should be the duties of the authority which was to undertake the whole of the work. Even if they followed the lines laid down by the author there were many difficulties in the way; and he fully agreed that the water boards proposed by the Royal Commission on Sewage should not be mixed up with counties, but should have their own governing bodies. The duties of the water boards should be wider than those proposed, and it was certain that the first thing to be done was to prevent pollution. County Councils could not act efficiently in the matter, but until we had the water boards they could do good work. One of the first steps to be taken was to provide a Bill or Act for the prevention of pollution which should be efficient, and that again was a very wide and difficult question. As to the prevention of floods, there should be some appeal from the central authority, which otherwise might become a very tyrannical power, especially as its interests would be to lay down definite laws for everything to be done, and if real improvement was to be made those definite laws must not exist at all. There must be very large elastic powers both in the case of the central authorities and the water boards.

Professor Robinson said that what was wanted was a proper State board, besides the local boards referred to in the paper, which would have control over the local boards.

Mr. H. A. Roechling said the proposals of the Royal Commission were very large and important. In the present day of decentralising the Commission were proposing centralisation, and local authorities would not like to be told what they ought to do in each case. It would be a great hardship in the case of County Councils who had done their duty to be deprived of their powers, if those powers were handed over to outside rivers boards. But the chief objection to the proposals of the Royal Commission lay in the proposed combination of advisory and judicial authorities. How could an authority in any fairness sit in judgment upon the advice which it had itself given if that advice should be at fault? The whole spirit of British legislation was against such a proposal, and if such were carried it would be carried only as a contentious measure.

Mr. R. F. Grantham said he was in favour of the establishment of the rivers boards or the water boards, but he thought that the central authority would be a very difficult body to establish.

Mr. Cyril H. Smith said that the pollution of rivers was one of the most important matters at the present day, and one which urgently required to be legislated upon, and he agreed with the proposals of the Royal

Commission as to the proposed rivers boards and the central authority. The great safeguard in the matter of rivers pollution was the natural self-cleansing of our rivers. A river cleansed itself six miles from the point of pollution, he believed. He hoped the time was not far distant when some enactment would be passed by Parliament for combatting the present evils.

Mr. A. P. I. Cotterill said that some alterations of the existing law were desirable, and the formation of rivers boards, with large powers, would be a step in the right direction. He thought it would be better that a rivers board, if established, should be a supervising board only—that they should not be an executive authority in any sense, unless the subordinate authorities over whom they exercised supervision made default in carrying out their duties. With such rivers boards throughout the country the formation of a central authority became essential, and would be almost automatically established.

Mr. A. J. Martin said he thought there was a concensus of opinion that there was plenty of work for a central authority, and that it would be well to have such an authority. But such a proposal was regarded with great distrust by local authorities because they feared they were going to be harassed by a new and elaborate set of rules and subjected to a great deal of vexatious interference. The aim of a central board should be to render the maximum of assistance to the local authorities with the minimum of interference. But the question of public health was too large to be in the hands of a body like the Local Government Board. It required the attention of a department exclusively engaged to deal with it, and he should like to see a responsible Minister of Public Health, preferably non-political, at the head of a department to control not only questions of sewage disposal etc., but of other questions affecting the public health and safety. In America and in our colonies were such boards, and our rulers might do well to study the Massachusetts Board of Health, with the view to the establishment of such a board here.

Dr. Rideal said the time was ripe for taking some steps in the matter, but there seemed to be a difficulty in bringing water supply under the same jurisdiction as sewage disposal. The Local Government Board as at present constituted needed amendment, and the hard-and-fast rules referred to had been a great drawback in regard to sewage disposal in this country. There were processes which one ought to have the opportunity of carrying out, and things had been hindered by the Local Government Board rules, and sums of money had been squandered for the same reason. Was there any storm-water filter in any part of the country which was working satisfactorily, or ever had? And yet they had been a fundamental rule for years. That was the sort of thing which had prevented progress. The Local Government Board had no chemist or bacteriologist, but the problems referred to were essentially ones for chemists, and it was high time that a chemist was attached to the Board, and if they were to have a central authority it should be allowed to deal with the problem.

The Chairman said there seemed to be a general agreement that it was now absolutely necessary that there should be some powerful central body to put in motion the local administrative bodies, and compel them to deal with the questions in their own areas. But he had detected, what was very natural, a very great dread of the expense and the cumbersomeness of a new Government department, or a new elected board of any kind. Either the Local Government Board or the Board of Agriculture, with a little reorganisation and some increase of powers, would be better able to deal with the matter as the central authority than any new body to be established. It was extremely undesirable that the administration should be taken out of the hands of the local bodies, who had already dealt with the question, and he thought that the administrative areas should be coterminous with the water sheds.

Mr. Scoble thanked the members for the way in which his paper had been received, and said he would make a written reply to the discussion, and that would be printed in the *Transactions*.

The proceedings then concluded.

ARCHITECTURAL AND TOPOGRAPHICAL SOCIETY.

From a Correspondent.

PROBABLY no other country in Europe has so many buildings of considerable architectural interest, apart from the great abbeys and mansions as there are scattered up and down these islands, and certainly no other people have so little regard for the fate of these relics as the British public. Only too often when we visit some little gem of a church or manor house, well remembered because of its intrinsic beauty and interest, we find that the charm has been destroyed by the so-called restorer, or that unrestrained decay has been at work.

To record the present state, and where possible the past, of all architecturally interesting buildings in these islands is the work of this Society, and it is hoped that by the publication of these records a keener interest in our great heritage may be fostered.

Fifteen parishes have been recorded so far, and as well as the brief accounts published in the *Record* careful measured drawings (to a large scale) have been made of several of the buildings described, and work is being carried out on several others.

By the courtesy of the proprietors of the *Builder* we hope from time to time to describe the work of the Society, to give information as to our progress. At the same time we hope to notice the buildings we are describing; many of them of exceptional interest, but hitherto unnoticed either because they are small, or because they lie off the beaten track.

The illustration of Askeaton Castle, which is subjoined, will be included in the account of that parish, which is to appear in the next (No. 4) issue of the *Record*. R. C.

AUCTIONEERS' INSTITUTE.—The annual meeting of the Birmingham and District Branch will be held at Stratford-on-Avon on January 27, that of the Northumberland and Durham Branch on January 28 at Newcastle, and that of the Yorkshire Branch on January 30 at Leeds. The Midland Counties Branch met on Thursday last at Derby. The members of the Council have presented a silver salver of the Georgian period to Mr. J. H. Townsend Green (of Messrs. Weatherall & Green), President in 1903-4, in testimony to his services as chairman of the finance committee during the last eleven years.

THE BUILDER

JANUARY 16, 1909.

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TERMS OF SUBSCRIPTION.

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Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

MEETINGS.

FRIDAY, JANUARY 15.

Glasgow Architectural Craftsmen's Society.—Mr. R. Murdoch on "Contracts and Contracting." 8 p.m.

Institution of Mechanical Engineers.—General meeting. 8 p.m.

Architectural Association Debating Society.—Professor E. Constable Alston on "Drawing from the Life—its Value to Architects."

SATURDAY, JANUARY 16.

Junior Institution of Engineers.—Visit to the engineering laboratories and workshops of the City and Guilds Central Technical College, Exhibition-road, South Kensington. 3 p.m.

Architectural Association.—First Spring visit, to Messrs. Selfridge's premises, Oxford-street. 3 p.m.

Builders' Foremen's Association.—Fifteenth annual dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

MONDAY, JANUARY 18.

Royal Institute of British Architects.—(1) To read the Deed of Award of Prizes and Studentships for 1908-09. (2) Mr. R. Stephen Ayling on "Public Abattoirs." 8 p.m.

Royal Society of Arts (Cantor Lecture).—"The Public Supply of Electric Power in the United Kingdom," by Mr. G. L. Addenbrooke, M.I.E.E. (Lecture I.) 8 p.m.

University of London (South Kensington, S.W.).—Mr. Banister Fletcher on "The Later German Renaissance, Heidelberg Castle, etc." 8 p.m.

Institute of Sanitary Engineers.—Mr. S. Barlow Bennett on "Water Supply to Villages." 8 p.m.

Liverpool Architectural Society (Incorporated).—Mr. T. Faulkner Shepheard on "Competitions." 6 p.m.

TUESDAY, JANUARY 19.

University of London (South Kensington, S.W.).—Mr. Percival Gaskell, R.B.A., on "French Painters."—II. 3 p.m. and 8 p.m.

Institution of Civil Engineers.—Papers to be further discussed: (1) "High Speed on Railway-Curves," by Mr. J. Wyatt Spiller. (2) "A Practical Method for the Improvement of Existing Railway-Curves," by Mr. W. Hamilton Shortt. 8 p.m.

WEDNESDAY, JANUARY 20.

Royal Society of Arts.—Mr. H. C. Brewer on "Gothic Art in Spain." 8 p.m.

Carpenters' Company, London Wall (Lectures on Arts Connected with Building).—Mr. R. Weir Schultz on "Reason in Building, or the Commonsense Use of Materials."—II. 7.30 p.m.

Edinburgh Architectural Association (Associates' Paper).—Mr. A. Muir on "Architecture and Social Evolution." 8 p.m.

Northern Architectural Association (Students' Meeting).—Mr. C. I. Greenhow on "The Early English Period, with Special Reference to the Work at Hexham, Durham, etc." 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the Royal Mint, Tower-hill, E.C.

THURSDAY, JANUARY 21.

Royal Institution.—Professor J. O. Arnold, D.Met., on "Mysteries of Metals."—I. 3 p.m.

Architectural Association.—Annual Dinner of Camera and Sketching Club, to be held at the Monico. 7 p.m.

FRIDAY, JANUARY 22.

Architectural Association.—Mr. J. H. Markham on "Reinforced Concrete." 7.30 p.m.

Birmingham Architectural Association.—Mr. Arthur S. Dixon, M.A., on "Early Roman Churches."

The Royal Sanitary Institute.—At the Manchester Royal Infirmary. 2.30 p.m. Discussion, in the Municipal School of Technology, on "The Manchester Royal Infirmary from the Hygienic, Sanatory, and Æsthetic Points of View," to be opened by Mr. Edwin T. Hall, followed by Mr. John Brooke. 7 p.m.

SATURDAY, JANUARY 23.

Royal Institution.—Professor Sir Hubert von Herkomer, R.A., on "The Critical Faculty."—I. 3 p.m.

THE INSTITUTE PRIZE DESIGNS.

WE wish it to be understood that we are always glad to publish Prize designs by students of the Institute of Architects for the Soane Medallion, the Tite Prize, and the Grissell Gold Medal (not excluding others if there is space and the authors wish for publication in our pages).

Illustrations.

OLD-STREET POLICE COURT AND STATION.

THIS building, erected in 1904-5 by the Receiver for the Metropolitan Police District (to whom the police courts of the metropolis were transferred in 1898), takes the place of the old Worship-street police court and Hoxton police station.

On a portion of the site it occupies stood the Porters and Walters' Almshouses, now removed to Wood Green.

The main portion of the building is devoted to police court purposes, and contains two courts, each complete with its separate accommodation for witnesses, solicitors, public, and prisoners; there is a large central waiting hall from which direct access is gained to clerks' offices, warrant officer, and gaoler, the latter for the payment of fines; a staircase leads out of this main hall to the second court on the first floor. There are quarters for the office keeper, with separate access, also twenty-one cells.

The police station portion has the usual administrative accommodation, with ten cells, and, in addition, section house accommodation for thirty-seven police constables, and quarters for a married inspector.

The building has a granite base, with red brick and Portland stone superstructure, the central waiting hall and courts being oak-panelled.

The cost of the building was about 38,000*l.*, exclusive of the site.

The general contractors were Messrs. Leslie & Co., Kensington, W. The mosaic work was by Messrs. Diespeker & Co., and the leaded glass and casements by Messrs. W. Morris & Sons, Ruskin House, Rochester-row, S.W.

The architect was Mr. J. Dixon Butler, New Scotland-yard, S.W., and Mr. W. Ashenden acted as clerk of works.

WEST ISLINGTON LIBRARY, THORNHILL SQUARE.

THIS branch library was completed in 1907, at a cost of about 6,600*l.*, of which 5,000*l.* was provided by Dr. Andrew Carnegie. The accommodation provided comprises the following:—

Basement—A lecture hall, 41 ft. by 36 ft., which will accommodate about 200 persons, also staff store and other rooms.

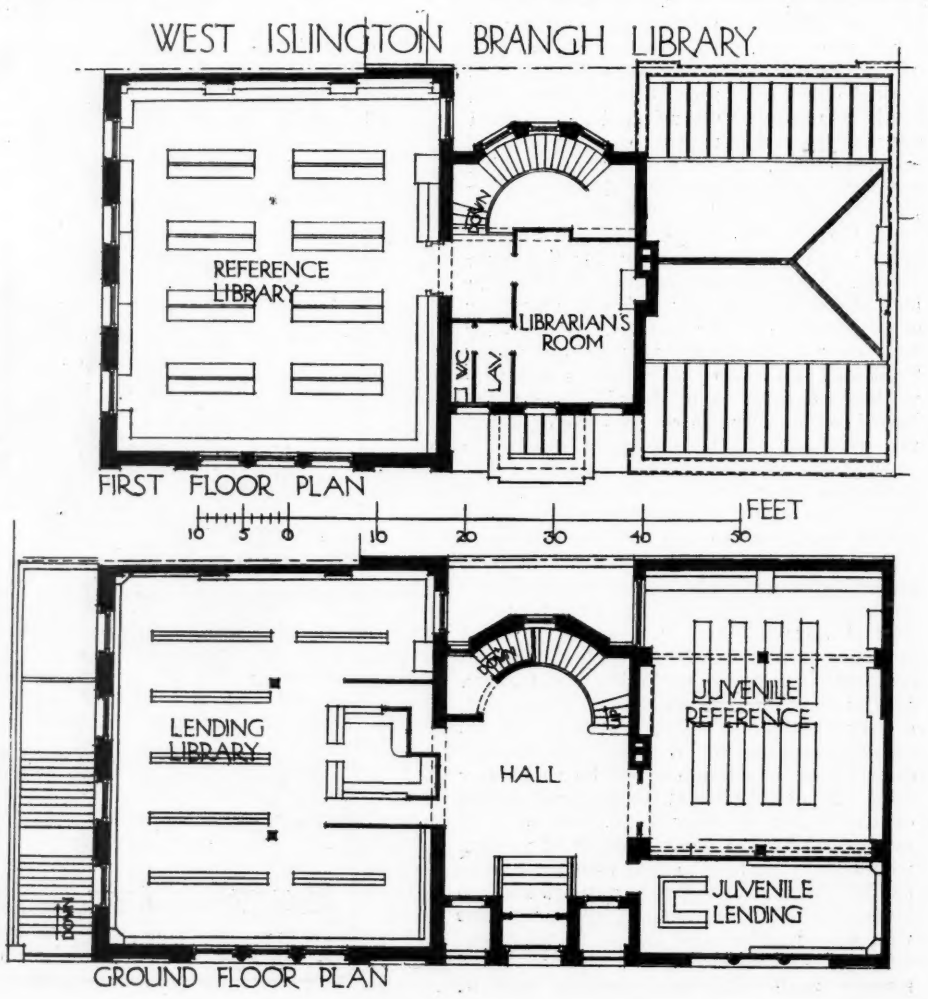
Ground Floor—Lending library, 41 ft. by 36 ft., designed to hold 20,000 volumes; children's library and reading-room to accommodate 100 readers and store 3,000 volumes.

First Floor—Reading-room, 41 ft. by 36 ft., to hold about 120 readers and 150 periodicals; librarian's room, and other accommodation.

The builders were Messrs. Dearing & Son, Ltd., of Islington. The architect was Professor Beresford Pite.

SUGGESTION FOR A LONDON BRIDGE WITH COVERED FOOTWAYS.

IT is strange, in view of the obvious conveniences of a covered town bridge, that so



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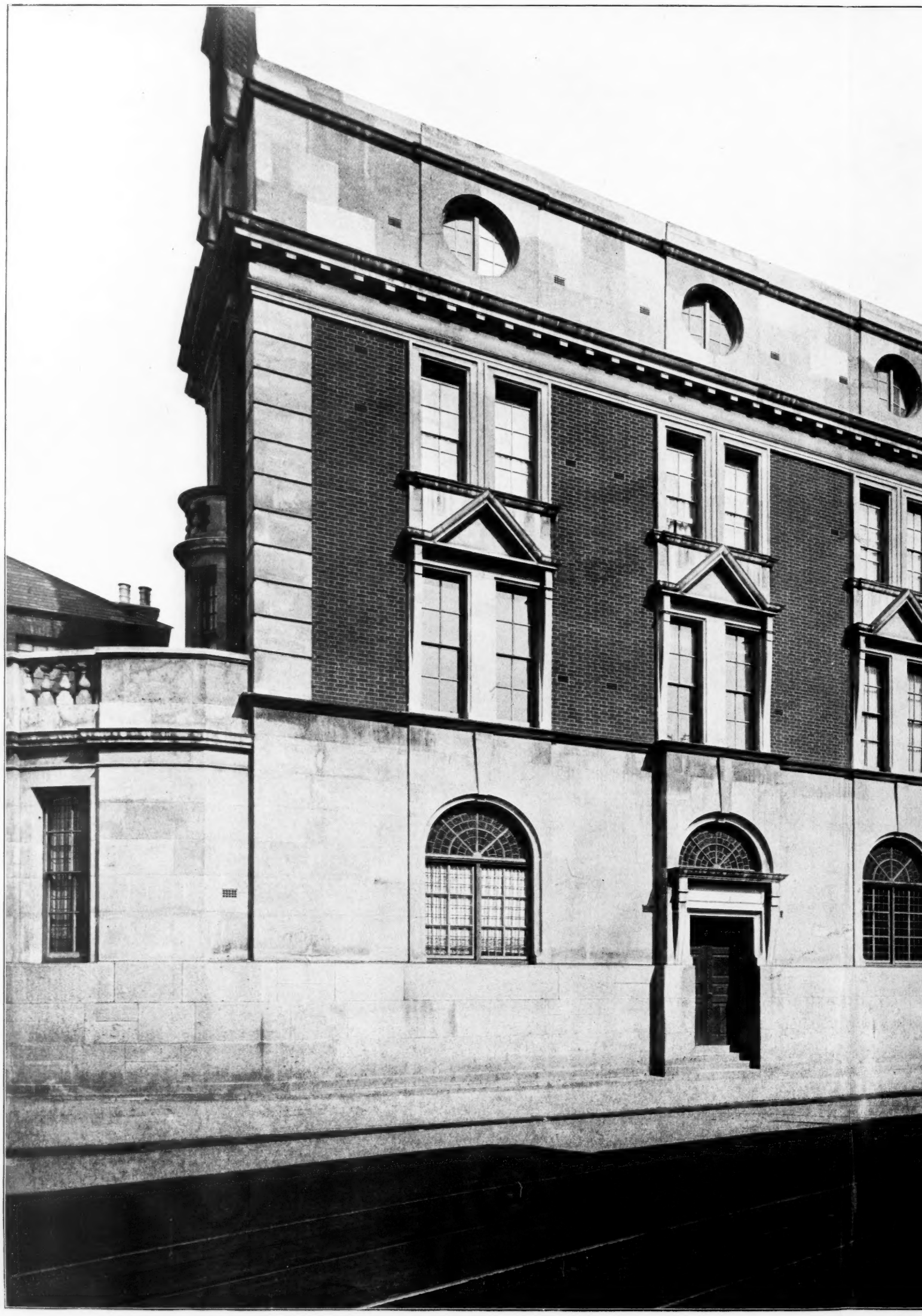


POLICE COURT AND STATION, OLD STREET, SHOREDITCH.—

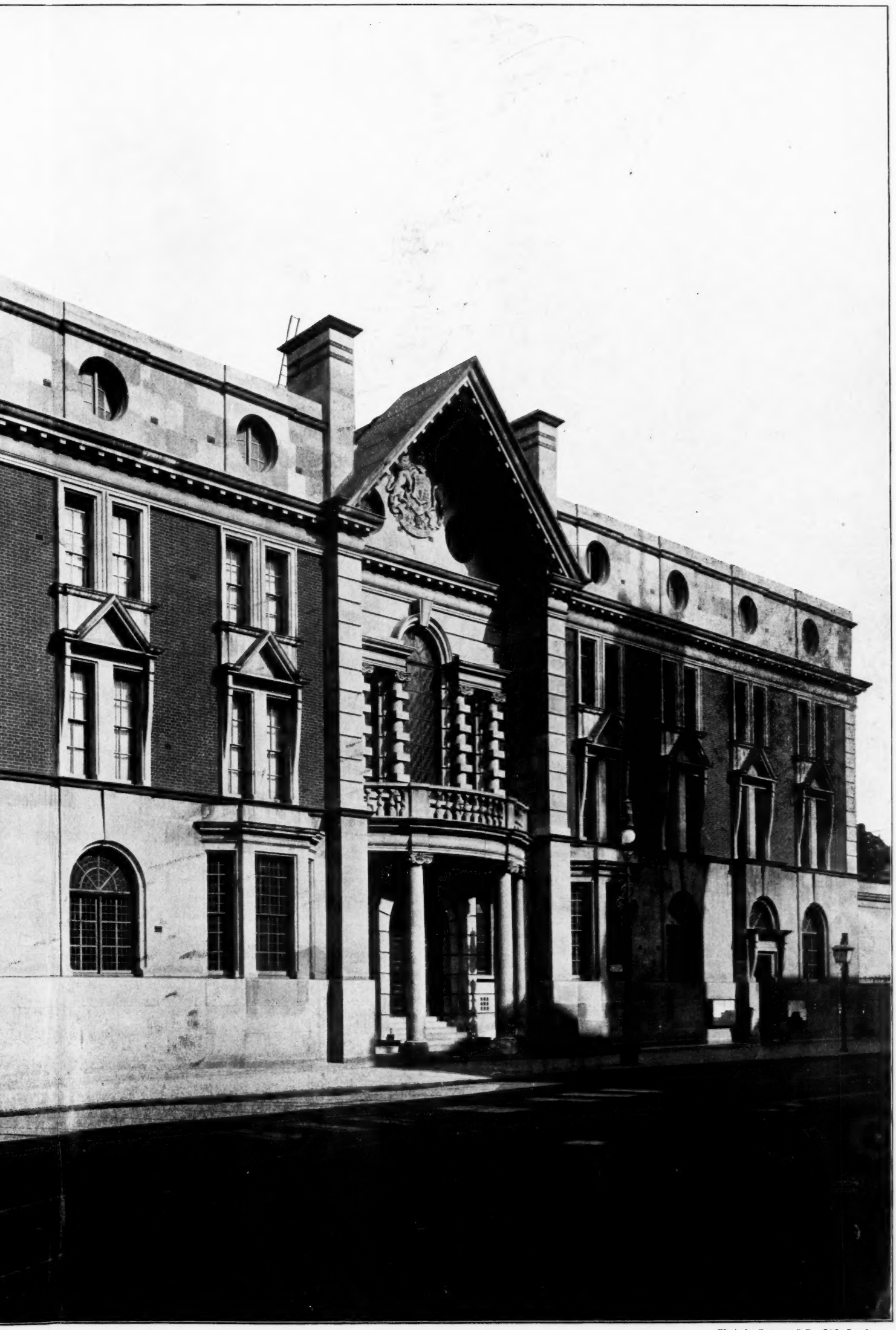
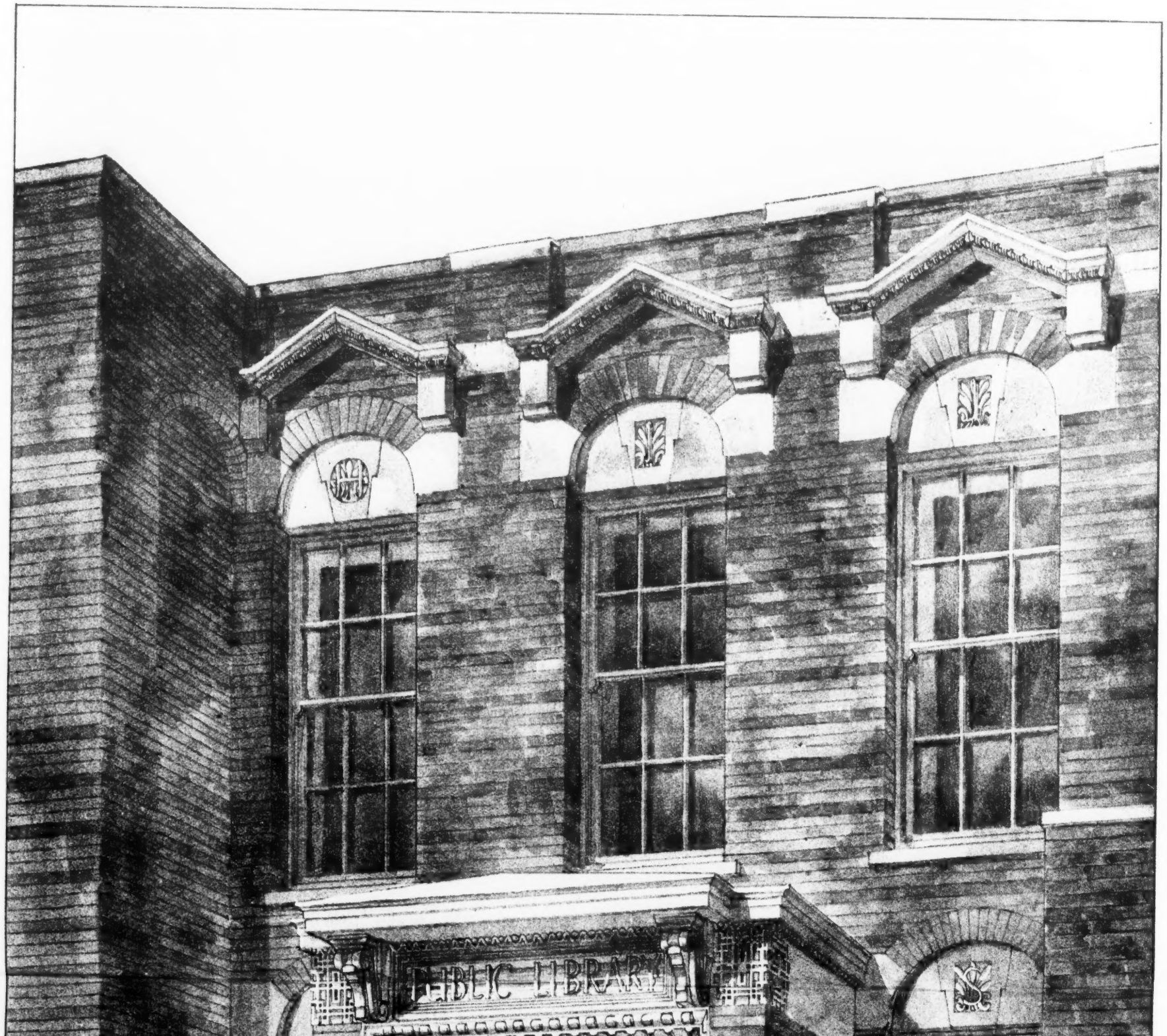
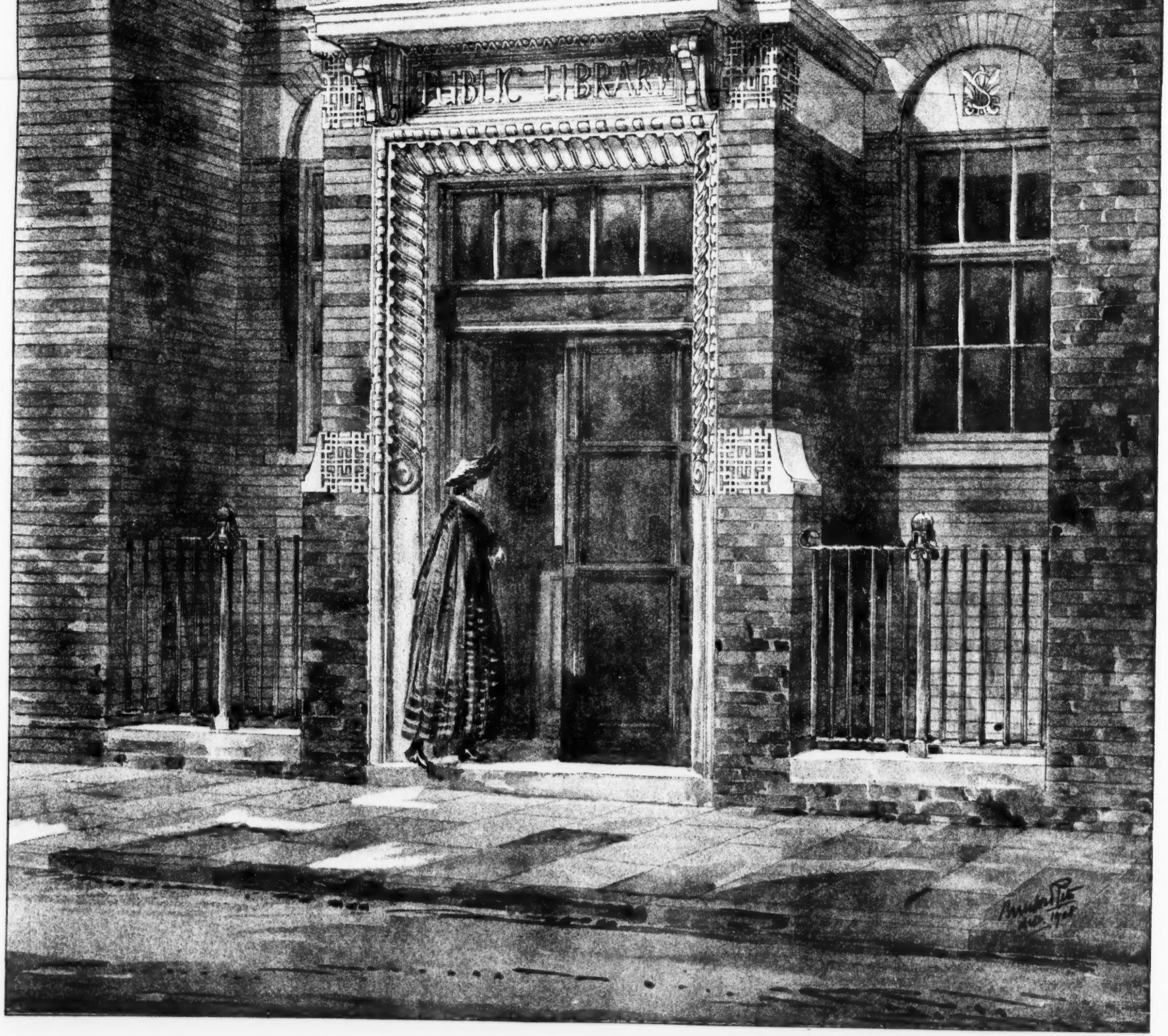


Photo by Sprague & Co., Ltd., London.

T, SHOREDITCH.—Mr. J. Dixon Butler, F.R.I.B.A., Architect.


PUBLIC LIBRARY



CARNEGIE LIBRARY, THORNHILL SQUARE, ISLINGTON.—Professor Beresford Pite, F.R.I.B.A., Architect.

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ew exist—perhaps none on an important scale. The well-known example crossing the Ticino at Pavia, erected by Gian Galeazzo Visconti, at about the end of the XIVth century, can hardly be described as monumental, though probably one of the most interesting existing. The Rialto Bridge, at Venice, is of comparatively short length; while the Ponte Vecchio Degli Uffizi, at Florence, is a covered bridge only in the sense that it carries a portion of the famous art gallery across the Arno. A fine design for such a bridge was made by Palladio, with three parallel streets, shops, and various loggias, intended for "the middle of a city that is one of the greatest and most noble in Italy," and is illustrated in his third book. One can only regret that it was apparently never executed. Old London Bridge was almost covered by buildings, though, it would appear, on a somewhat chance arrangement, and in more recent times—in the latter part of the XVIIIth century—Thomas Sandby, R.A., put forward a proposal, illustrated in an interesting design, for a covered bridge near Somerset-place—presumably where Waterloo Bridge now stands.

The course of a river of considerable width offers free play to wind, rain, and snow, which suggests a desirability that town bridges crossing them should afford some protection from the discomforts of bad weather and the heat of the summer's sun. This design was made to indicate some possible advantages of such an arrangement. The assumed width of river is about that of the Thames at Blackfriars, and the levels and arrangement of the upper and lower roadways are similar to those at Waterloo Bridge. The effective width of the bridge roadway is about 75 ft., and the total width between the balustrades 90 ft., allowing a walking space within and outside the external arcade overlooking the river, as may be seen from the plan and section. The bridge road terminates at each end in a "place," architecturally treated. The footways only are covered, except where the cross blocks occur, at centre and ends of the bridge. The upper terrace of these blocks (50 ft. above roadway) could be made available for public resort. The columns of the central structure are about 40 ft. in height. The middle span of the bridge is 100 ft. in width, and the other spans reduce gradually to an 80 ft. width at the ends.

The sculpture groups might be of a civil, municipal, or marine character, according to their position in the general scheme.

FREDK. R. HIORNS.

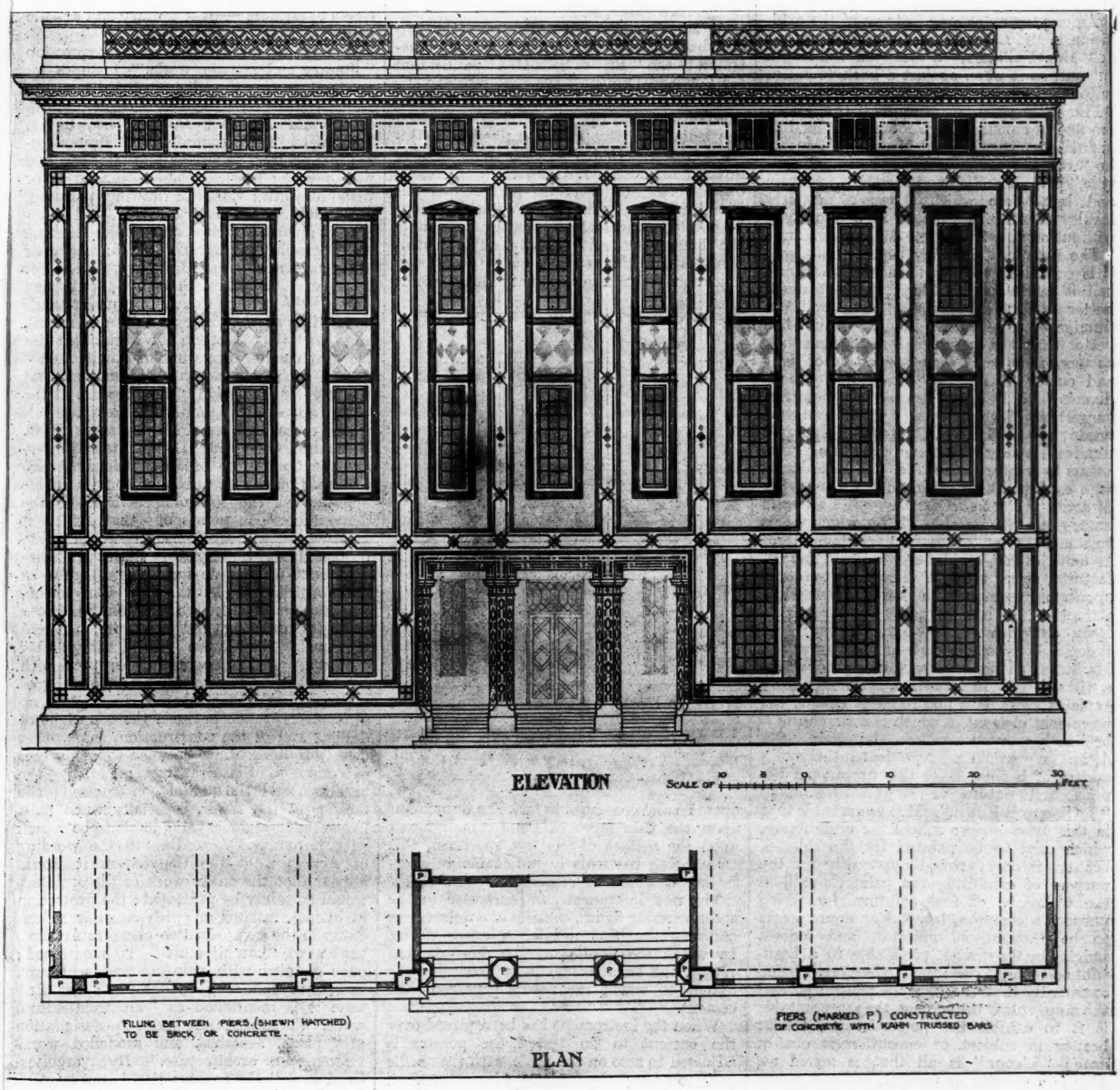
The drawing was hung in the Royal Academy Exhibition of last year.

DESIGN FOR A FACADE FOR A CLUB, IN FERRO-CONCRETE.

THIS is a design by Mr. C. W. Pike, submitted in the *Builder* Competition for a Façade for a Club in Ferro-Concrete, and which was thought very well of by the assessors, and is the only one we are publishing in addition to the two prize designs.

As in the case of the second prize design, the section of the cornice is rather too much like the stone cornice in another material, but in other respects the design shows the right kind of treatment for a concrete façade—surface decoration without suggestion of jointing.

The author might not improbably have had the second prize if he had not made his windows too small to be accepted as suitable for a club.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PLAN

"Builder" Competition for a Façade of a Club in Ferro-Concrete. Design highly commended. By Mr. C. W. Pike. General Elevation.

(For Detail Elevation see Lithograph Plate.)

PICTURE EXHIBITIONS.

THE INTERNATIONAL SOCIETY.

THE Society with the resounding title of "International Society of Sculptors, Painters and Gravers," which now fills the New Gallery with its exhibition, offers us a show absurdly out of keeping with its pretensions. A great proportion of the exhibition suggests that it is an International Society not for collecting the best but the worst and most *outré* examples of the art-production of different countries. It would be possible to make a list of a large number of works on the walls which could only be described as equally ugly and vulgar, and at variance with any sane and sound ideal in art. What purpose is served, we wonder, by M. Weber's reduction of "Adam and Eve" to semi-bestial creatures, or by M. Legrand's series of illustrations of the lowest and most odious types of French *danseuses;* or by M. Bussy's painting of a scraggy naked doll, rather than woman, under the ambitious title "Lourd Crépuscule d'Eté"; or by Mr. Ricketts's nightmare sketch called "Walpurgisnacht"? And how came Professor Alfred Marshall to permit Mr. W. Rothenstein to make a scarecrow of him in a life-size portrait? If these kind of things, and others as bad, are "art," truly art would be something we could do better without.

Among the redeeming features of the exhibition is Mr. Lavery's characteristic portrait of "Mrs. Vulliamy," a side-view full-length cut out, as it were, against a background of untouched canvas. Mr. Charles Shannon's "Phœbe," a child portrait, and "The Bath," are fine in colour though looking rather like unfinished pictures; and Mr. J. E. Blanche, in "Brackets in the Dining-room, Offranville," gives a brilliant oil-sketch of furniture and bric-a-brac which shows a masterly faculty of suggesting detail in a free style, without any hard realism. Mr. Peppercorn's "The Estuary" is really beyond criticism; it is ridiculous to exhibit such a thing and call it landscape painting; and not much better is Mr. F. Mayer's "Montreuil," a smudge of paint rather than a picture, but better than the last-named work, inasmuch as there is at least some suggestion of light and colour in it. In "Briqueterie Abandonnée" M. E. Claus has made a powerful suggestion of colour and light in rather a crude style; and Mr. C. Conder's "Crépuscule Tendre" really offers us something that seems to answer to the title. M. Le Sidaner, who exhibits three works in his usual style of artificial light effect, seems quite a classic among the abnormal work by which he is surrounded; and Mr. Hornel's "Playmates," in spite of his highly conventional manufactured style, is quite refreshing to come upon amid so many things that are far less attractive; in normal exhibitions his style looks eccentric and far-fetched, but here it comes in as something from a better world. Mr. Strang's large group of three figures under a title, "The Interruption," which hardly explains itself, is a fine piece of colour, the prominent element in which is a woman in a brilliantly-painted yellow brocaded silk dress. We would a great deal rather, as a matter of beauty, have this dress than the unadorned nature of M. Caro-Delvaille's "Le Sommeil Fleuri." It is remarkable that in this ultra-modern school the nude figure, which used to be painted for the sake of beauty, is only painted apparently for the purpose of exhibiting the painter's skill in the technique of flesh-painting, for which purpose a common, fat, vulgar figure seems to be thought all-sufficient, and indeed, judging by the results, preferable to a beautiful and refined one; the modern creed being apparently that the uglier a picture is, and the more vulgar the subject, the more suitable is it to exhibit the power of the artist: beauty in subject or execution is out of date; "vigour" is all that is aimed at. This is a novelty at present, but the public will not always go on accepting it; there will be reaction presently, and people will wonder why they ever liked such things.

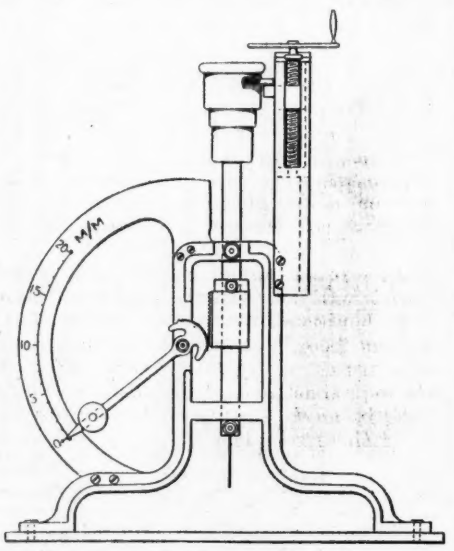
The sculpture in the Central Hall, though neither a large nor a remarkable collection, is on a much higher average level than the paintings, and includes work of much interest. There are a number of small works by Carpeaux, among them a reduced replica of the splendid central figure in the group of "The Dance" on the Paris Opera House; and the bas-relief portrait figures by Saint-Gaudens are of great interest.

THE GOUPIL GALLERY.

A collection of small pictures by Mr. George Thomson, at the Goupil Gallery, contains, among other things, some very good pictures of architectural subjects; treated rather pictorially than architecturally—that is to say, the artist is more concerned with broad effects than with detail; but the architecture is satisfactorily drawn and proportioned, and the sense of colour in these pictures is exceedingly good. There are also some very good interiors, that of St. Wulfrans, Abbeville, in particular. There are some good small landscapes also, among which that entitled "Pennard Castle, South Wales," should particularly be noticed.

WATSON'S TESTING NEEDLE FOR PORTLAND CEMENT.

AS MOST cement users are aware, the two drawbacks to test needles such as that illustrated in the "British Standard Specification for Portland Cement" are that results vary with the handling and the powers of observation of different operators. The new form of needle apparatus here described is the invention of Mr. C. H. Watson, the managing director of Messrs. I. C. Johnson & Co., its object being to ascertain and record the initial and the final set of Portland cement by purely mechanical means so as to eliminate the human element entirely. The instrument is intended to get over the further objection that the ordinary hand-needle



Watson's Testing Needle for Portland Cement.

operates and continues to make an impression upon the thin layer of scum which forms upon the surface of the test specimen, this scum being particularly noticeable in slow-setting qualities of cement.

The new instrument, as illustrated in the accompanying figure, consists of a light frame carrying the test needle, a screw device by which the needle can be lowered and raised, and an attachment for recording the extent to which the needle penetrates the cement.

When the instrument has been placed over the cement to be tested the pointer is adjusted to zero on the scale with the needle just touching the surface of the cement. By rotating the small wheel attached to the screw the needle can be raised above the cement, or allowed to sink into it by its own weight without the least risk that any additional weight will be added unintentionally by the hand of the operator. Moreover, as the pointer indicates the exact amount of perforation, there is no loophole for misinterpretation.

Before the cement has begun to set, the needle will pass completely through it to the distance of 20 millimetres, which is the depth of the mould. But as soon as the needle fails to penetrate the sample beyond 15 millimetres, initial set has begun to develop. Final set, ascertained in the same way, is regarded as having taken place when the needle does not penetrate deeper than 2 millimetres, the reason for this limit being to allow for perforation of the surface layer of scum previously mentioned.

This instrument is ingenious and ought to be widely appreciated by users of Portland cement.

ARCHITECTURAL COPYRIGHT.

THE following extracts, referring more especially to architectural copyright, are from the articles of the revised Berne Convention for the protection of literary and artistic works, dated November 13, 1908.

According to Article 1 the signatory States form a Convention for the protection of the rights of authors in their literary and artistic works.

Article 2 states that the expression "literary and artistic works" includes all productions in the domain of literature, science, and art, whatever method of form of reproduction they assume; *i.e.*, books, pamphlets, etc., dramatic and dramatico-musical works, choregraphic works, and pantomimes; musical compositions with or without words; works of drawing, painting, *architecture*, sculpture, engraving, and lithography; plans, sketches, and models referring to geography, topography, *architecture*, or other sciences. According to Article 4. however, it appears that by "published works" the present Convention understands "edited works" (whatever that may mean), and that "the exhibition of a work of art and the construction of a work of architecture" do *not* constitute a "publication," so that the apparent inclusion of architecture at the outset appears to be entirely illusory.

In a recent number of *L'Architecture*, M. G. Harmand, Consulting Lawyer to the Permanent Committee of International Architectural Congresses, published some valuable remarks on the foregoing articles of the Convention. He points out that Article 2 declares that "architectural works" are protected, and the signatory States will hence be bound to provide for this protection in their legislation. In the new Convention, works of architecture are mentioned between those of painting and sculpture, whereas previously they were placed only after geography and topography, together with sciences in general. M. Harmand goes on to remark that whereas in France no difference is made between the copyright of designs and of the construction, some other countries differentiate between the copyright extended to the drawings made by the architect and the actual construction; the façades of the latter, especially when built in streets or squares, being liable to be copied with impunity. According to the wording of Article 2 of the Convention it would appear that the entire work of the architect would certainly be protected; the protection is, in fact, insisted on with singular redundance in the text. In two places in Article 2 the word "architecture" is mentioned once coupled with painting and sculpture and once following topography; the first time it is mentioned as "an architectural work," the second time under the designation of "plans, sketches, and modelled work referring to architecture." By "architectural work," the construction is not implied but since the construction is considered as a reproduction of the architectural work it is unnecessary to repeat that the construction

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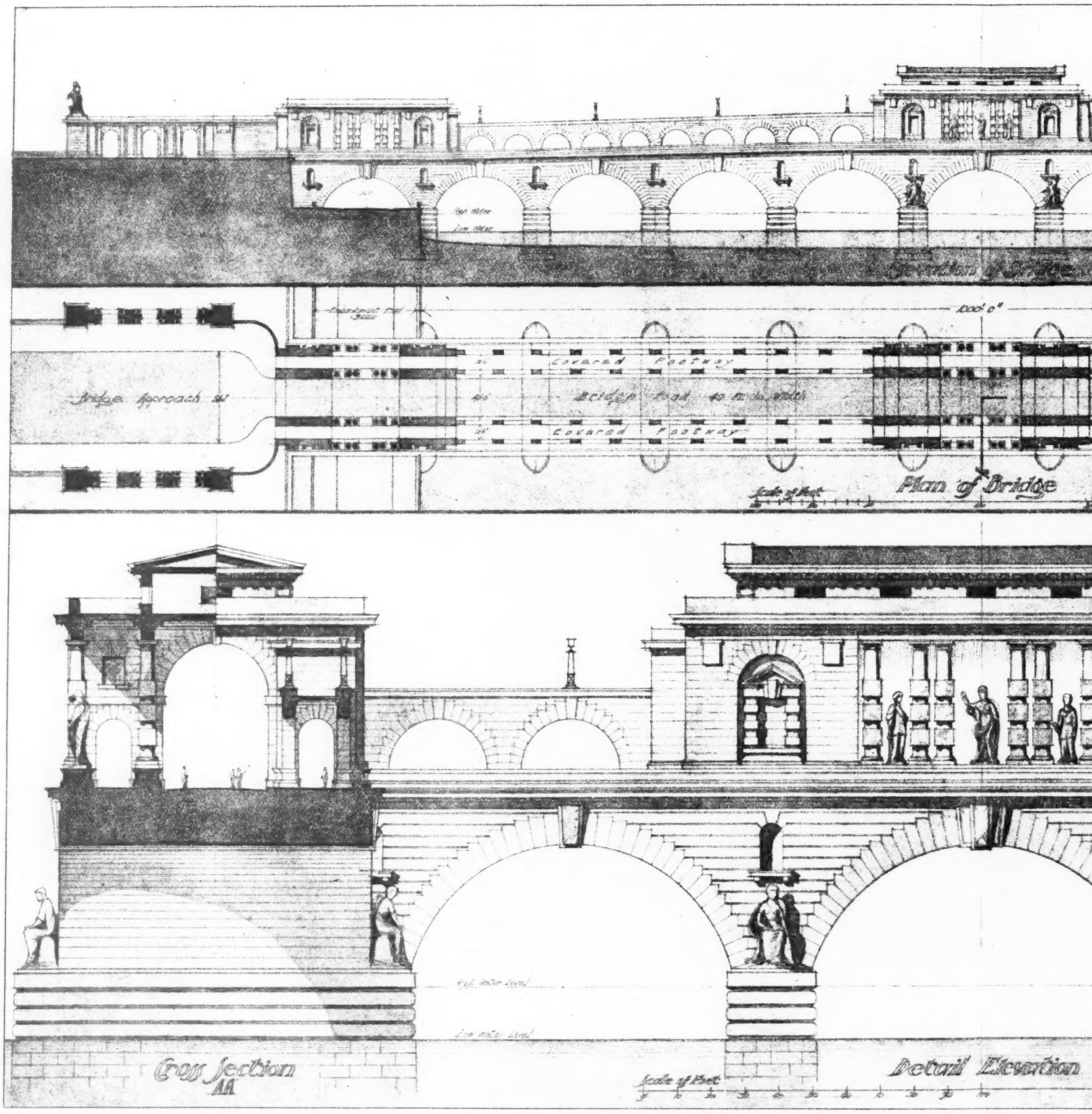

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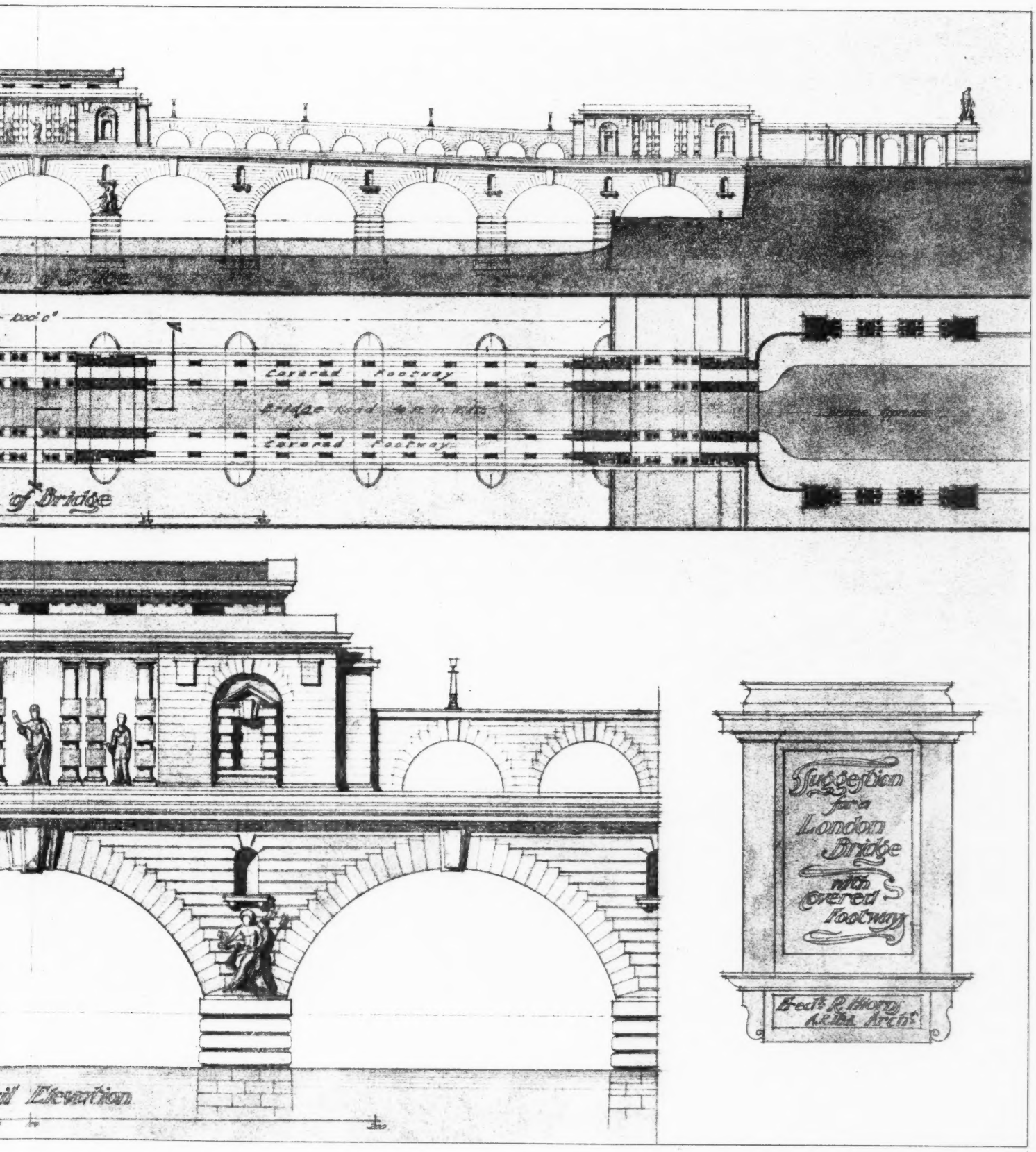

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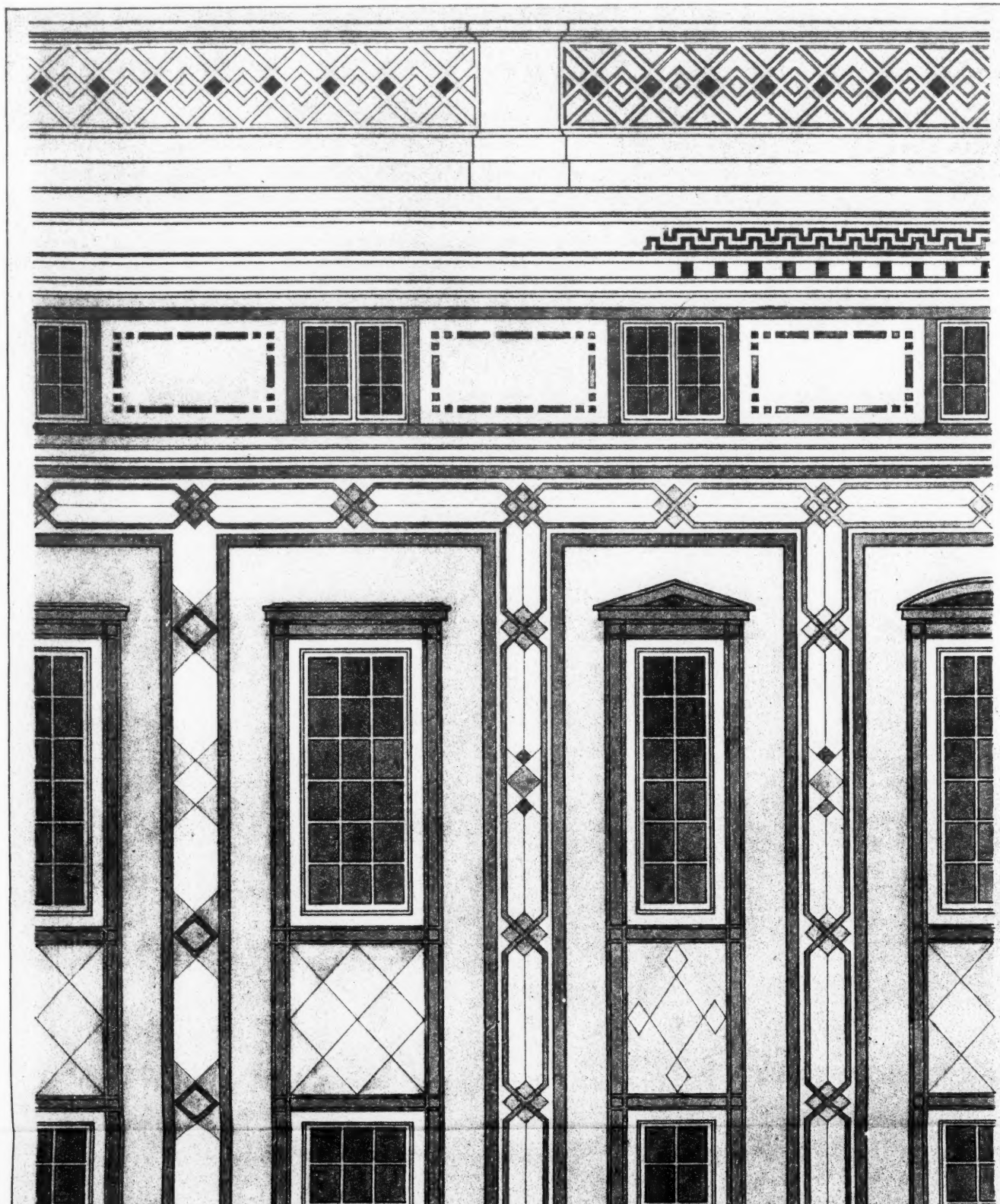

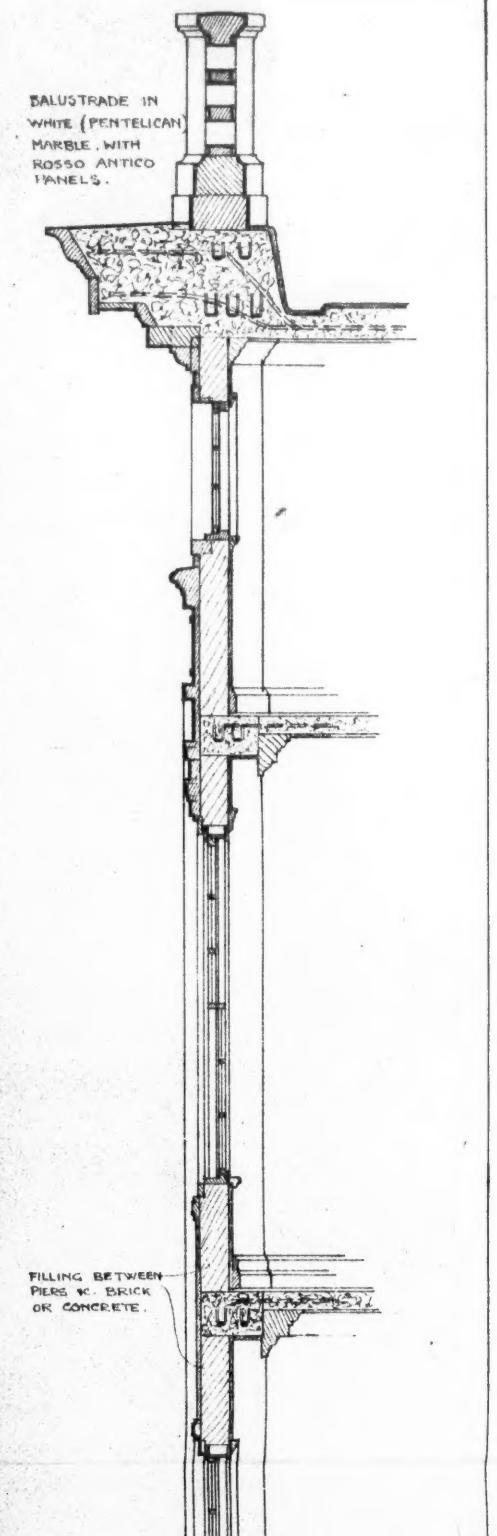
BALUSTRADE IN WHITE (PENTELICAN) MARBLE, WITH ROSSO ANTICO PANELS.
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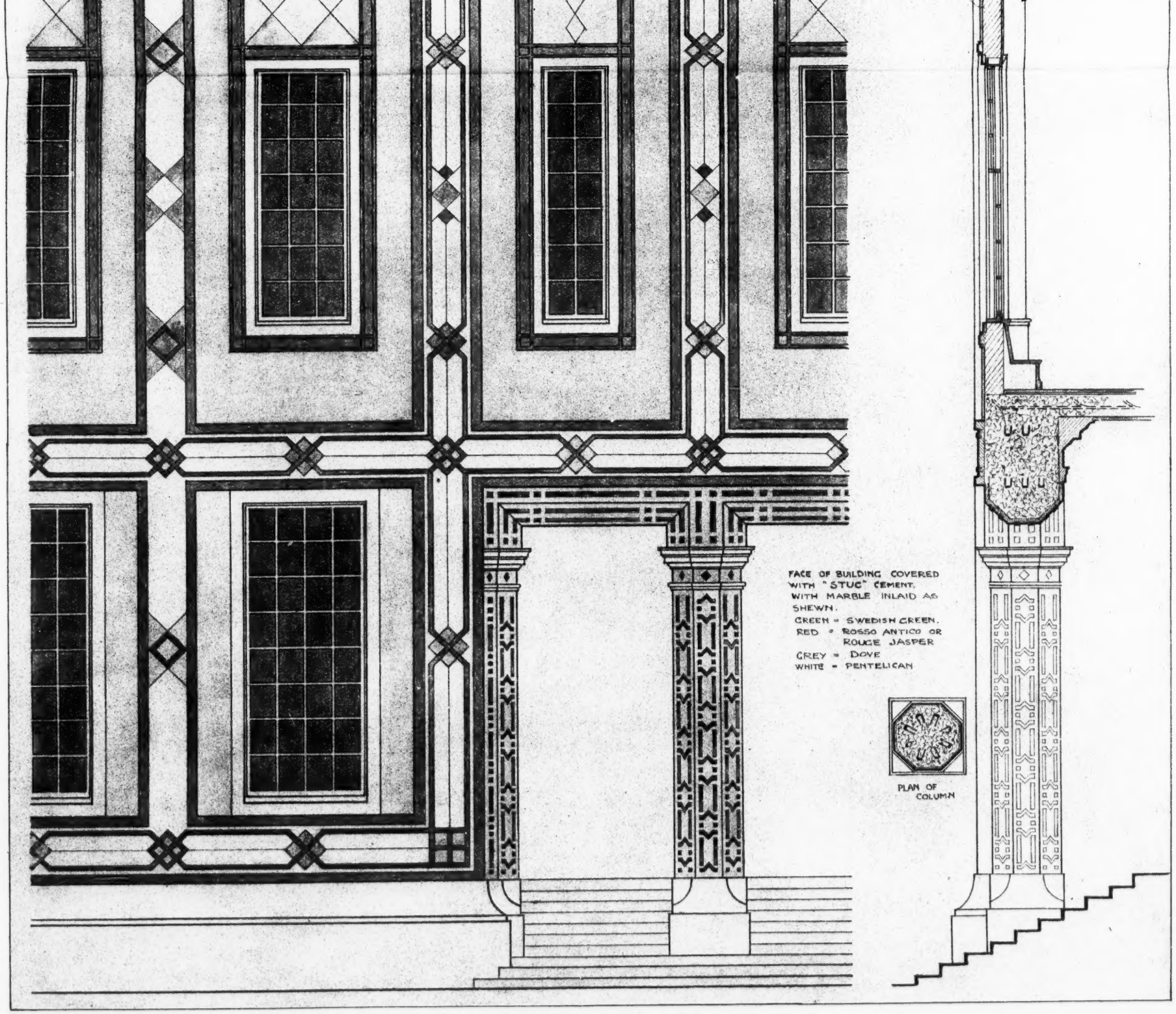
FACE OF BUILDING COVERED WITH "STUC" CEMENT, WITH MARBLE INLAID AS SHEWN.
GREEN = SWEDISH GREEN.
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BUILDER COMPETITION FOR A FAÇADE FOR A CLUB, IN FERRO-CONCRETE. DESIGN HIGHLY COMMENDED. By Mr. C. W. Pike.

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is protected as well as the original drawings. In countries like Switzerland, where street façades may be freely copied, only the interior and other façades would really be protected.

Article 9 of the Convention provides resolutions concerning articles which appear in the Press. Until the contrary be proved, the man who signs a work is considered its author. Logically, on the same principle, this resolution makes it necessary to sign all drawings and even buildings. On this question of signature, M. Harmand observes, there still is required a resolution which was considered in 1896, as a necessary complement of the Convention, viz., a clause providing against the suppression of the signature of an author or the placing on works, or their reproductions, of signatures other than those of the actual authors. It is to be hoped that the next Conference will deal with this subject, which is of such importance to all artists.

Architectural Societies.

EDINBURGH ARCHITECTURAL ASSOCIATION.

The third ordinary meeting of the session of the Edinburgh Architectural Association (Associate Section) was held on Wednesday last week, in the Rooms, 117, George-street, Mr. J. Inch Morrison presiding. Mr. Edward C. H. Maidman, architect, Edinburgh, read a paper on the subject of "Cottage Hospitals and Their Planning." After dealing with the accommodation to be provided in relation to population, he made some remarks as to site, the various apartments and their equipment, the amount of space necessary for each patient, and provisions for heating and ventilation. He urged the importance of compactness in planning, and the simplest forms of construction and fitting, as through thoughtlessness and over-elaboration of fittings the annual cost of upkeep was increased to such an extent that it became a drag on the management, and lost in favour with the community. Plans of various hospitals were displayed, including those of Crieff, Moffat, Skipton (Yorkshire), and Bridgnorth (Shropshire), erected from the author's designs.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

The January meeting of the Council was held on the 5th inst., the President in the chair. The minutes of the last meeting having been signed, a letter was read from the secretary of the Dublin University Commission asking for a detailed statement of the subjects and courses of study suitable for students seeking diplomas in architecture. It was decided to hold a special Council meeting to consider the matter. Correspondence with reference to Derry Guild Hall was referred to the Professional Practice Committee for a report. The following resolution was passed:—"County Surveyors.—The Council of the Royal Institute of the Architects of Ireland note with satisfaction that the Galway County Council have lately resolved to require their County Surveyor to devote his entire time to the duties of his official position, and the Council of the Institute takes the opportunity of expressing the hope that a similar resolution, but including also the Assistant County Surveyors, may without delay be passed by every County Council in Ireland who have not already done so, inasmuch as it is contrary to the interests of the public service that persons holding the important and responsible position in question should engage in professional competition with architects and engineers, upon whom, moreover, such competition inflicts a serious injustice, which they as ratepayers are justified in strongly protesting against." A copy of this resolution to be sent to the secretary of every county council in Ireland.

Engineering Societies.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

The current number of the *Proceedings* of this Society contains two papers and contributions to the discussion of three papers previously read. "The Purification of Ground Waters Containing Iron and Manganese," by Mr. R. S. Weston, is a communication of considerable length and equal merit. In it the author discusses the deferrisation and demanganisation of water supplies under the heads—theoretical, historical, European practice, experience at Reading (U.S.A.) and other American waterworks, demanganisation, and the design of deferrisation plants. "The Operation of Passenger Elevators," by Mr. R. P. Bolton is a subject appealing with particular force to American architects in view of the extent to which the fashion for tall buildings has permeated every part of the country. In the Borough of Manhattan alone there are more than 9,000 passenger lifts, of which number more than 4,000 have been installed during the past six years. The data presented by the author are quite worthy of attention on the part of British architects and engineers notwithstanding the different conditions attached to lift services in the United Kingdom. Among the reports of discussions on papers those on the "Foundations for the New Singer Building" and on "Nickel Steel for Bridges" deserve special mention.

Competition News.

BURY SECONDARY SCHOOL.

The decision is announced of the assessor appointed by the Royal Institute of British Architects to consider the designs for Bury's Municipal Secondary School, to be erected at a cost of between 12,000*l.* and 13,000*l.* There were 141 designs for competition. The awards are:—First premium, Mr. J. T. Halliday, A.R.I.B.A., Stockport; second, Messrs. Castle & Warren, London; third, Messrs. Appleyard & Quiggin, Liverpool.

BRANCH LIBRARY, DEPTFORD.

The Public Libraries Committee of Deptford Borough Council issued a report on Saturday announcing that they had completed the purchase of a site, at present covered by Nos. 116 and 118, New Cross-road, for a branch library for the south-west and north-west wards. Mr. Carnegie had consented to give 4,500*l.* to be expended on the building; the cost of the site, estimated at 1,700*l.*, being payable by the local authority, who are also to defray such expenses as the architect's commission and the clerk of works' wages. The Committee having considered what preliminary steps should be taken, had decided (subject to the usual sanction) that the character of the proposed structure was not sufficiently important to justify designs being invited from provincial architects. Therefore the competition will be limited to members of the profession practising in the City and County of London, and the President of the Royal Institute of British Architects is to be asked to advise in the appointment of an assessor, who is to receive a fee of 50 guineas. Premiums of 50 guineas, 25 guineas, and 10 guineas are to be respectively awarded to the architects whose designs are placed by the assessor first, second, and third, the premium of the successful competitor to be merged in the remuneration to be made to him for performance of the work in connexion with the erection of the building.

PROPOSED WELSH NATIONAL MUSEUM BUILDING.

At a special meeting of the Council of the National Museum of Wales, held on the 7th inst., at the City Hall, Cardiff, Principal Griffiths gave notice that he would move at the next meeting that plans for the new building be obtained by means of public competition. By doing this it was hoped to facilitate a settlement of the long-standing claim of Mr. E. Seward, architect, for plans he had prepared for the Museum Committee of the Corporation.

RURAL HOUSING, ESSEX.

The Billericay Rural District Council have resolved to offer a premium of 10 guineas for competitive plans and estimates of four-room and six-room cottages, with a view to the provision of improved working-class homes in their district, where it is found that a scarcity of suitable accommodation causes a migration of young married people into the towns, with a consequent depopulation of the villages.

PUBLIC SHELTER AND PROMENADE, WHITLEY BAY, NORTHUMBERLAND.

The Whitley Bay and Monkseaton Urban District Council recently instituted a competition for a public shelter, to seat 1,000 persons, and promenade for 400, to cost 1,200*l.*, a premium of 20*l.* being offered for the best design. Over thirty designs were received. The design submitted by Mr. Edward Cratney, of Wallsend and Sunderland, has been selected by the Council, and the above premium awarded to him.

Trade Catalogues.

MESSRS. W. GEIPEL & CO. send us a circular describing their "Vulcan" thermo-electric pyrometers for indicating and recording temperatures ranging up to 2,900 deg. Fahr. The recording type of instrument is provided with a galvanometer whose needle swings free of the paper, thus obviating errors due to friction, but at intervals of 15 seconds the needle is automatically depressed so as to touch the paper momentarily, thereby leaving a dotted record. The chart is of transparent paper through which a scale can be read, so that the needle indicates as well as records. These instruments are of neat design and reasonable cost.

BOOKS RECEIVED.

LONDON—PASSED AND PASSING. By Hanslip Fletcher. (Sir Isaac Pitman & Sons. 21s.)

THE PLANNING OF FEVER HOSPITALS. By Albert C. Freeman, M.S.A. (The Sanitary Publishing Company.)

DUTCH PAINTING IN THE NINETEENTH CENTURY. By G. Hermine Marins. Translated by Alexander Teixeira de Mattos. The de la More Press. 15s.)

WHERE TO LIVE ROUND LONDON (Northern Side). Compiled by Freeman Bunting. Second Edition. (The Homeland Association. Cloth, 2s. 6d.; paper, 1s.)

LOCKWOOD'S BUILDER'S AND CONTRACTOR'S PRICE-BOOK: 1909. Edited by Francis T. W. Miller, A.R.I.B.A. (Crosby Lockwood & Son. 4s.)

Correspondence.

REGISTRATION OF ARCHITECTS.

SIR,—Let me congratulate you on your excellent article in this week's *Builder* on the subject of "Provincial Architects and Registration." The views of our provincial brethren—if Mr. Thornely's paper read at Liverpool may be taken as correctly expressing them—are, in my judgment, so utterly destructive of the best interests of architecture, that I venture to trouble you with my reasons for so thinking. I have for many years, as a devoted though humble member of our profession, which I have always loved, consistently opposed the registration of architects. So long as I live I will not fail to do so, and I devoutly hope that the absurd idea of legal registration may be—as applied to architects—consigned to deserved oblivion.

The profession of architecture is unique in this respect, that it is both an art and a science. For this reason the analogies that are attempted to be drawn from other professions—though sufficiently plausible to catch unthinking people—are really unsound and perfectly inapplicable. It is obvious that, as regards art, registration might, and I believe would, exclude many gifted artists, while, on the other hand, it would certainly admit many who had no claim to be so. This alone is sufficient to condemn it. As regards science, all that registration could do is already done, and much better done than it could be by any outside body, by the Board of Examiners of the Royal Institute of British Architects. The examinations are doing good work, and are appreciated by the great body of the profession, as is demonstrated by the large number of applicants.

It is contended that registration would enable the public to distinguish qualified from unqualified practitioners. This would be needless, and it is a fallacy. It would be needless, because the public already know

that the letters F.R.I.B.A. and A.R.I.B.A. are evidence that those who possess them are qualified, for these affixes are a chartered right conferred only on those who have been properly educated. It is a fallacy, because a large amount of work would, in spite of registration, continue to be done by men who are not architects, just as it is done now. Registration would *not* touch these men, because they are not architects and could not pass any test. But it *would* do what would be much worse, for it would admit, to start with, all such incompetent practitioners, without any test, to the rank of qualified architects. It is not architects, but these men, against whom society should be protected, and the first thing that registration would do would be to confer upon them a status and a position to which they would have not the shadow of a claim.

Registration would inevitably involve a split in the profession of most serious proportions, such as would create two opposing camps, with the result that the best interests of architecture would be seriously marred, if not ruined.

I earnestly trust that our provincial brethren will give unprejudiced consideration to what appear to me unanswerable reasons for abandoning all idea of registration.

J. MACVICAR ANDERSON.

SIR,—I was under the apparently false impression that the spectre of Registration had been safely laid by the clever compromise engineered by Sir Aston Webb, Mr. E. T. Hall, and other skilful diplomatists. It is, therefore, with some surprise that I find Mr. Thornely raising the ghost again in so awesome a manner; and quoting and dealing at such length with some ephemeral remarks of my own, uttered in the heat of controversy some years ago, which I had thought to be as trite as I hold them still to be true. There must be more in them, however, than I supposed, if they need for their disproving so heavy a battalion of words. Mr. Thornely assumes one to stand as a prophet only; I was, however, the mere echoer of facts, which he can verify for himself if he takes the trouble. No thought of competition or fear of it came near my thoughts at that time or since—I was dealing solely with the question of the furtherance of good architecture.

Mr. Thornely's arguments do not seem to me to lead him one step in the same direction. It is quite true that he and those who think with him present to us the easy and obvious side of the controversy, a fact readily conceded; but the easy and obvious is by no means necessarily the true. But I am not going to be led into a correspondence on the general question. I concur so entirely in the admirable remarks you make upon it in your leading article that no further words seem to be called for, save to express the hope that the *Builder* will continue to give such sound advice to its readers. I assume, of course, that Mr. Thornely is a regular subscriber.

W. D. CARÖE.

SIR,—Your leading article of last week, under this title, upon the paper which Mr. H. L. Thornely read before the Liverpool Architectural Society, was so obviously intended to be impartial, while naturally emphasising your own point of view, that I am emboldened to write you a few words in further exposition of the case of the registrationists, as seen by myself and others.

You seem to have assumed that Mr. Thornely admits, and that we generally admit, "that architecture is an art, and therefore cannot be examined in," and that we do not recognise "that art is a great deal more than one element in architecture; it is the element *par excellence*, without which architecture is hardly worth consideration." On the contrary, we *do* recognise this to the full, and we do *not* admit that architecture as an art cannot be examined in. The whole experience of the Royal Institute of British Architect examinations is in our favour. This has proved most conclusively that examination in the art of architecture is practicable; and more, that it is beneficial. It compels education and training in art, without which even the greatest artist—in architecture especially—would never do work of real value. Again and again, too, I have seen men of undoubted artistic ability shirk the examinations, and the training involved, simply because they are not *compulsory*, with the result that they have remained half educated in their art, and are practising on a much lower plane than their abilities should have enabled them to reach. Registration would cure this—or, rather, the compulsory education and examination which would be the corollaries of education.

The first registration—the "hall-marking," as you call it, of all and sundry by a Government stamp—has not proved a great or lasting evil in any other profession that has adopted it. Had the Registration Bill been passed when it was first introduced, more than twenty years ago, there would now be few practising architects—none of the younger school—who had not gone through a proper training; while the "hall-mark" only goes so far as to dub a man "an architect," a title which he claims now; it does not go so far as to raise him to membership of the Institute or any other corporation. I have a pet scheme of my own, however, which would get rid of even the sentimental objection which exists in some minds to this, to which I have given utterance at the Institute more than once. Like you, I am an advocate for uniting the profession—and I would propose to do it by a registration scheme which made the Institute and the profession coterminous, admitting all members of the Society of Architects and of the various provincial Societies, who are qualified by age and practice or by examination, to fellowship or associateship, as the case may be, and all others who can reasonably claim a vested interest to live by architecture into licentiateship, which, as now constituted, would be a class into which no further admissions should be made. All the Societies mentioned would thus be absorbed into or become branches of the Institute—a great corporate body, not merely representing but including all the architects of the country. To attain this ideal I should personally be willing that the Society of Architects should cease to exist, having done its work; but meanwhile its Bill remains as the only measure yet produced which deals with the case in a statesmanlike manner. Anything further on the lines which I suggest must come from the Institute.

Registration on these lines would surely raise architects in the public esteem; but this is not a point, after all, of great importance. We must, as men, take our own position. The great thing is to become united, and to raise the general standard of architecture—which can be raised by compulsory training as in no other way.

G. A. T. MIDDLETON.

SIR,—Your leading article in last week's issue criticises the remarks I recently made at Liverpool in my paper on "Registration," with reference to the attitude of the Royal Institute of British Architects in relation to this measure, as "picking holes in its management and misrepresenting its intentions." It further states that these remarks were "in bad taste and uncalled for."

From a careful perusal of my MS. I cannot help thinking that such criticism is scarcely in accord with the very courteous tone of the leader generally.

I find that the only references I made to the Institute could be briefly summarised as follows:—

1. That any measure of registration which meant the setting up of a new governing body with full control of the qualifying examination would, in the long run, do the Institute nothing but harm. That those who have for years laboured heart and soul for its welfare could not be altogether blamed if they said both in their hearts and openly, "these things must not be."

That the warmest supporters of registration had now begun to see that any measure must, to stand the smallest chance of success, be, therefore, engineered by the Institute itself, and receive the benediction of its leaders.

2. That there appeared at least a possibility of the new Licentiate class proposed by the Institute proving a failure.

That men now outside would not be anxious to take this degree, and so admit themselves the acknowledged juniors of rival practitioners from the same locality, who had either the degree of Fellow or Associate.

That there was just a possibility of little progress being made with a registration measure by the Institute until the Licentiate's scheme had, at any rate, been given a lengthy trial; even if the period of probation now announced had to be extended for the purpose.

You will, I think, be the first to admit that there is, after all, more than one opinion as to the attitude of the Institute upon registration and architectural education generally. Remembering this, I had particularly endeavoured, when touching on its methods, to avoid all bickerings and personalities, and am in consequence now somewhat hurt to have an accusation of remarks "in bad taste" brought so publicly against me. At any rate, I had not intended to express on such points more than friendly disagreement with a body of which I hope I am a loyal member.

I therefore trust that with your usual fairness you will give me the opportunity of, at least, explaining my intentions. If they have not been fulfilled, then my phrasing must have been unfortunate.

May I also be allowed to answer one or two of the points you raise in your interesting article?

I certainly agree that no qualifying examinations will cause buildings equal to the Houses of Parliament to spring up like mushrooms, neither will it hinder their production; and perhaps if such an examination raises, in the long run, the general average of knowledge and education—as many of us believe it will—there is at least a chance of men of Barry's stamp appearing at lesser intervals.

That engineers have no compulsory qualifying examinations is surely no reason why we should adhere to their methods if a good case to the contrary can be made out. Particularly so when the Institution of Civil Engineers followed the Royal Institute of British Architects in the first instance by introducing examinations as the basis of a candidate's admittance to their body.

It does not, therefore, at all follow that compulsory qualification by examination may not even yet come about in so far as engineers are concerned.

I do not think that the large body of practitioners now outside the Institute (some 4,000 odd by-the-bye) stand aloof in order to be a deliberate hindrance to general progress and unity.

In my opinion it is only the time, trouble, and knowledge that the Associates' Examination demands that keep them outside. If the degree was thrown open to-morrow without any restrictions, I believe that the candidates for admission would be surprisingly large. This being, I suppose, for obvious reasons impossible, it now only remains to be seen what results will be obtained from the proposed Licentiate class.

Personally, I shall be surprised if the recruits prove encouraging either in numbers or names.

H. LIONEL THORNELY, F.R.I.B.A.

*** Mr. Thornely's MS. has been returned to the Hon. Secretary of the Liverpool Society now, so that we cannot refer to it again, but we think the wording of his remarks was certainly stronger than his "summary" in this letter conveys, and they gave the impression (perhaps unintentionally) of a rather decided *animus* against the Institute, and an insinuation that that body was playing a game of its own, for which we do not consider there is any foundation. In regard to the opinion that

provincial architects suffer more from the competition of unqualified practitioners than London architects, Mr. Thornely will see (page 53) that Professor Pite, an experienced London architect, gives it a positive contradiction.—ED.

ARCHITECTS' PUPILS.

SIR,—On November 14 last there appeared a letter in your paper from "W. A. H." upon the important subject of architects' pupils. It is extremely disappointing to find that the matter has not been taken up by your correspondents; it indicates the fact that architects, as a body, are not interested even in a matter which so vitally affects their own welfare.

I have personal knowledge of a case where two years ago an architect had three pupils and one assistant. Work is now scarce, and of course the assistant was the first to go. The pupils have completed their articles, two of them are now members of the great body of the unemployed, and the third has just commenced practice on his own account, his late principal being unable to employ him.

This is practically what is taking place all over the country, and yet we all constantly lament the fact that the profession is sadly overcrowded.

Can we wonder that the architectural profession is overcrowded when we are turning out half-trained pupils at the present rate? I have long hesitated to write this letter; I thought it impossible that such an important subject should receive such scant consideration by your readers. However, in the absence of the interest I had hoped for on the question, I desire to record my protest against the selfishness of those who, for the sake of the premiums and a few years' cheap service, take unsuspecting youths into their offices, and, on completion of their articles, turn them adrift, half-trained, into an already-overcrowded profession. I think the suggestion of "W. A. H.," that the number of pupils should be restricted, is good, and thank him for bringing the matter forward.

H. F.

EARTHQUAKES AND BUILDINGS.

SIR,—I am interested to read, in a "Note" of your last issue concerning the terrible destruction wrought by the earthquake in Messina that an Italian engineer attributes much of the damage to the high buildings. Now, the average height of buildings at Messina can hardly be said to be excessive. Those, for example, on the Marina, where the greatest damage was done, were not more than 60 ft. or 70 ft., and many of them a good deal less; moreover, the walls were remarkably strong and well built, the whole frontage to the harbour being one continuous design erected soon after the great earthquake at the end of the XVIIIth century. In my opinion a far more dangerous fault in the construction of buildings all over the city was the reckless use of balconies, which, instead of being light iron constructions attached to the wall were generally supported upon heavy stone brackets, which at the slightest vibration would tear away the masonry above. I have often noticed how this defect has injured the walls in previous earthquake shocks.

In a building I erected a few years ago in the neighbourhood of Messina I carefully avoided all balconies resting upon stone brackets, and in another building there which I have recently altered, and which has stood earthquake shocks since the XVIth century, no projecting balconies exist. I am glad to say that in neither case has any serious damage been done by this latest earthquake, and this I regard as being largely due to the entire absence of balconies.

H. INIGO TRIGGS.

ELY CATHEDRAL PULPITUM.

SIR,—I wonder whether any of your readers can kindly enlighten me as to the whereabouts of a certain drawing of the stone pulpitum or organ-screen which stood in the nave at Ely until the year 1770? The late Rev. D. J. Stewart, in his "Architectural History of Ely Cathedral" (1868), p. 43, says that "the only record of its" (the screen's) "general features are a rude sketch still existing in the British Museum, and the following description given by Mr. Essex." The latter's verbal description is too long to quote here. As to the sketch, the writer does not actually state that it was the work of Mr. Essex. However, on the chance, I have searched through the Essex MSS. in the Manuscript Department, unfortunately in vain. Dr. Willis Clark, of Cambridge, to whom I have already applied, admits that he, too, failed to discover the drawing in question; nor did inquiries which, last summer, I made personally of the Dean and others in Ely lead to any better result. And yet, assuming that a drawing, known and recorded to have been in the British Museum forty years ago, ought to be there now, I venture to beg anyone who may have seen and noticed it to be so kind as to inform me through your columns in what department and under what reference number the sketch may be found.

AYMER VALLANCE.

STEEL-FRAMED CONSTRUCTION.

SIR,—Can you induce some reader who has had actual experience in the design and construction of these buildings to give details of comparative cost with ordinary brick walls?

Most of the papers read and letters written do not appear to assist those who may desire to erect buildings. I am of opinion that very few buildings will be erected as the cost must be far in excess of the ordinary.

SURVEYOR.

PROPOSED GUILD OF ARCHITECTS' ASSISTANTS.

SIR,—I should be very pleased to hear from any of your readers who are interested in the formation of an impartial tribunal, a guild, for the consideration of all questions concerning the professional status of the architect's assistant, and all matters pertaining to the existing relations between the principal and the assistant.

I think, and a large number agree with me, that the present time is the time to consider generally the organisation of the profession and the federation of all existing societies and interests in order to bring representative professional opinion to bear on the many pressing problems, of which that of unemployment stands foremost, now facing the assistant.

All our existing societies, although largely composed of assistants, do not address themselves to matters which are peculiarly in the interest of assistants. I do not believe that any of the existing societies separately can undertake the work successfully, but that a federation of the whole, or a majority of them, on the lines of a guild could do so.

There are prejudices in various sections of the profession against each, and sometimes against all, the existing societies, and in addition to this fact all the present associations are either primarily educational or represent interests purely those of the principal, or embody both these objects. It would, therefore, be extremely difficult, if not impossible, for any single existing society to take up the work, which is peculiarly the function of a guild.

Opinion on this matter is gradually being aroused, and nothing more is required at the present moment but to call a meeting of all sympathisers in the movement to consider the entire situation, and which I hope to do at an early date.

ERNEST J. DIXON, A.R.I.B.A.

60, *Idmiston-road, Stratford, E.*

TESTS WITH FIRE EXTINGUISHERS.

TWO RECENTLY-ISSUED reports by the British Fire Prevention Committee refer to experiments undertaken to demonstrate the practical effect of simple fire-extinguishing appliances and materials, such as are generally available and in common use.

The first series of tests, conducted in July last, was intended to ascertain the effect of the application of water in small vessels upon various burning substances both in a room and in the open air. The utensils actually employed comprised galvanised-iron buckets, an ordinary earthenware pitcher, an earthenware quart jug, a glass tumbler, and a hand pump fitted in a large bucket. These simple appliances proved almost uniformly effective in promptly extinguishing small fires in their early stages, except in respect of burning spirit such as petrol, thus showing that the value of the most elementary means of fire extinguishing should by no means be overlooked.

The second set of tests, conducted in December last at the instance of the Incorporated Association of London Dyers and Cleaners, was for the purpose of inquiring into the merits of asbestos cloth, sand, and steam as agents for the extinction of flame given off by burning petrol and other combustibles.

Asbestos cloth was proved to be of great utility in subduing fires caused by spirit vapour, the effect of steam was also most marked, and the efficiency of sand was demonstrated for soaking up spirit whose vapour is ignited.

Both series of tests constitute a welcome change from the investigations more generally undertaken by the Committee into the merits of patented or proprietary articles and systems of building construction.

BUILDING WORKS IN LONDON AND SUBURBS.

SOME of the following items are compiled from the plans officially lodged, in accordance with law, with various municipal authorities. There is never any delay in publication on our part, but for various reasons it occasionally happens that some progress has been made with the work before the plan is lodged:—

Block of mansions in Park-street and Upper Grosvenor-street, Mayfair. Mr. W. D. Caröe, architect, 3, Great College-street, S.W.; Messrs. Higgs & Hill, Ltd., builders, South Lambeth-road, S.W.

Addition to workshops, for the Continuous Counter Check Company, 14 and 14A, Leytonstone-road, Stratford, E.

Alteration, provided school, Hermit-road, Canning Town, E. Mr. W. Jacques (Newman & Jacques), architect, 2, Fen-court, Fenchurch-street, E.C.

Billiard showroom, rear of The Grove, Stratford, E., for Mr. J. Ascott, 51, Station-road, Stratford.

Additions and alterations to Tidal Basin Tavern, Tidal Basin, Stratford, E.

Heating-chamber and chimney-stack at Messrs. Savill Brothers, Brewery, Leytonstone-road, Stratford, E.

Additions to van-shed and cash store, for Messrs. Price & Co., Chaucer-road, Forest Gate, E.

Additions to machine shop at Messrs. Moreland & Son's premises, Silvertown, E.

Store, Lucas-road, Stratford, E. Messrs. Coult, Son, & Co., 7, Stracey-road, Forest Gate.

Addition to brush works, rear of Romford-road, Stratford, for Mr. G. A. Diggings, 50A, Romford-road, Stratford.

Heating-chamber for Wholesale Co-operative Society, Silvertown, E.

Pair of semi-detached houses, Cambridge-road, Wimbledon. Mr. A. Lyon, 97, Hartfield-road, Wimbledon.

Florists' workshop at 70, Home Park-road, Wimbledon. Messrs. Luff & Sons, Wimbledon-park and Coombe-road, Wimbledon.

Forty-seven houses in Ashen-grove and fourteen houses in Melrose-avenue, Wimbledon. Mr. C. Barwell, 2, Revelstoke-road, Battersea, S.W.

Extensions of offices at London and South-Western Railway Station, Hill-road, Wimbledon. Mr. A. W. Cooper, surveyor, 85, Gresham-street, E.C.

Additions to Wimbledon College, Edge-hill, Wimbledon. Mr. F. A. Walters, architect, 37, Old Queen-street, S.W.

Four houses, Albert-road, Wimbledon. Mr. W. Rawlins, surveyor, 45, King William-street, E.C.

Pair of semi-detached houses, Cambridge-road, Wimbledon. Messrs. Daw, Saville, & Co., surveyors, 217, Chancery-lane, W.C.

Factory, rear of Clapham Park-road and North-road, S.W. Messrs. F. & H. F. Higgs, 41, Gresham-street, E.C.

Additions to Westminster School, S.W. Mr. A. H. Tiltman, Raymond-buildings, W.C.

Six houses, Belmont-hill, Lewisham, S.E. Messrs. H. & G. Taylor, builders, Boyne-road, Lewisham.

Four houses, Gaynesford-road, Lewisham, S.E. Mr. E. C. Christmas, builder, 55, Dartmouth-road, Lewisham.

Extension, Summerstown Undenominational Mission, Blackshaw-road, Lambeth, S.E., for the Trustees.

Proposed erection of buildings, for Messrs. Doulton & Co., Ferry-street, Albert Embankment, S.E. Messrs. Buckland & Garrard, surveyors, 8, Frederick's-place, E.C.

Branch library, New Cross-road, Deptford, S.E. (4,500*l*.). Architect to be appointed by Borough Council.

Buildings at corner of Thornton-street and South-street, Walworth, S.E. Mr. T. W. Sloman, jun., builder, South-street, Walworth.

Rebuilding 27 and 28, Oxford-street, W., for Messrs. Parkes & Gotto, stationers.

Rebuilding 163, Oxford-street, W., and 35, 36, and 37, Poland-street, W. Messrs. Phillips, Phillips, & Co., agents, 6, Newman-street, W.

Public elementary school for boys (450 places), Kilburn Park-road, Paddington. W. Rev. P. H. Leary, vicar, St. Augustine's, Kilburn Park-road.

Adaptation of premises in Holborn, for Messrs. Lewis & Burrows, chemists. Messrs. Parkinson & Son, shop fitters, etc., Fisher-street, Southampton-row, W.C.

Extension of premises in Holborn, for Messrs. Buchanan & Co., distillers. Mr. F. G. Minter, builder, High-street, Putney, S.W.

PRESENT POSITION OF THE TIMBER TRADE.

WE take the following particulars from Messrs. Foy, Morgan, & Co.'s Annual Wood Report for 1908:—The importation of sawn and planed wood goods has shown a very remarkable reduction during the past year, and is by far the smallest recorded during any of the previous twelve years. The reduction in quantity compared with 1907 is nearly 150,000 standards, and as compared with 1906 stands at more than 360,000 standards, or, in percentages, a diminution of approximately 8 per cent. and 18 per cent. respectively. The magnitude of this sudden restriction in the volume of the supplies is unprecedented in modern times, and, occurring as it has simultaneously with a sharp drop in import cost, shows how deep-seated has been the want of confidence and lack of business enterprise engendered by the losses in trading throughout the country during the last two years. On the other hand London, with the various small southern ports coming within the range of its influence, as well as the group of ports in and around the Humber, where Russian goods are most in vogue and which depend to a greater extent on the building and similar trades, all show on the average an importation only slightly—perhaps 5 per cent.—less than last year. The Bristol Channel ports, which at times take a considerable share of the Canadian and American supplies, but which cater mainly for the building and general trades and have little concern with shipbuilding, have taken as a group about the same quantity as in the previous year.

The result of the past year's trading has, however, been most unsatisfactory to all the classes engaged in the wood trade—to shippers, importers, and dealers alike. Since 1901 the consumption of wood has been steadily declining—mainly owing to the increasing slackness of the building trade during this period, and to the fact that the use of iron and cement as substitutes for wood in all large buildings is being so greatly extended. But during the last two years there have been special causes operating to curtail still further the outlets for wood, particularly from the serious depression in the shipbuilding and engineering trades, the cotton industries, and all the export trades. In a large measure the added troubles of the past year can be ascribed to the setback in the general trade of the country which is evidenced, firstly, by the decline in value of most other raw materials, and, secondly, by a decreased business turnover appearing from the returns made by the Bankers' Clearing House and by the Board of Trade. In fact, the present depression is world-wide, and its origin must be sought in the American financial panic of a twelvemonth ago, the effects of which can only be obliterated by a period of favourable monetary conditions developing the restoration of commercial confidence. Already there are hopeful auguries of the commencement of a revival in general trade, supported by the certainty of cheap money for some time ahead, while the surprising development in the world's production of gold undoubtedly foreshadows an ultimate upward movement in general prices. Notwithstanding its present state of depression, the wood market can scarcely fail to respond in a measure to this external support, especially as the main factors within the trade itself—such as the abnormal depletion of stocks in every importing country, and the large reduction in the supplies for next season—are already recognised as making a higher level of prices inevitable.

LONDON BOROUGH COUNCILS.

Battersea.—Eight streets are to be paved with the Council's artificial stone at an estimated cost of 1,991*l.*, and tar footpaths in two streets are to be repaired, the cost being 215*l.* The London County Council has again been urged to provide a sanitary convenience on Wandsworth Common.

Deptford.—Subject to conditions, a contribution of one-third of the cost of the necessary street widenings and paving works is to be made in connexion with the tramway along Evelyn-street. A report on the competition for a branch library in the New Cross-road appears in another column.

Greenwich.—Eastcombe-avenue is to be formed and paved as a new street at an estimated cost of 1,884*l.* Paving works, etc., are to be carried out at Shooter's Hill cemetery at an estimated cost of 500*l.* With regard to the proposed erection of ventilating shafts for the purpose of abating or minimising the nuisance caused in warm weather by the emanation of sewer-gas from the surface ventilators in the roadway, several sites for shafts were obtained by the Medical Officer of Health and submitted to the London County Council, who, however, on receipt of same, stated that no proposal which provides for more than a merely nominal payment could be entertained. No sites can be had on these terms, and the Town Clerk has been accordingly instructed to lay a case before counsel with a view to learning what further steps the local authority can take in the matter. A portion of Sun-lane, Shooter's Hill-road, is to be formed and paved as a new street, and tenders are to be invited for forming and paving Eversley-road.

Hackney.—The work of paving Lansdowne-road is to be put in hand. The gas lighting in Lea Bridge-road is to be improved, the annual extra cost approximately being 30*l.* One hundred and thirteen applications were received for the position of draughtsman for the plans, etc., relating to new streets and flagging works. Mr. W. A. Coradine, of the Borough Surveyor's Department, Bethnal Green, has been appointed to the position. In connexion with the electrification of the tramways, portions of Mare-street, Lower Clapton-road, and Upper Clapton-road are to be paved with hardwood. Tenders are to be invited for the foregoing as well as for repairing hardwood paving in various localities. It is proposed to widen Homerton-row on the south side between College-street and College-lane. The net cost to the Council is put down at 884*l.* The Electric Lighting Committee have decided in favour of substituting direct labour for contracts in the carrying out of main extensions and house services. The result of inquiry show that every municipal authority within a radius of twenty miles of Charing Cross employ direct labour in this direction, with the exception of Finchley and Stoke Newington Councils. Tenders are to be invited for supply of cables, trenching, and jointing materials, etc., for a period of three years.

Holborn.—The Housing Committee have further considered a report by the Medical Officer of Health as to a site which may be available and suitable for the erection of dwellings for the working classes. As a result the Medical Officer of Health has been instructed to lay before the Committee definite information as to the necessity existing in the borough for housing accommodation for the working classes. The question of the lighting of the new street from Torrington-square to Montague-place has been adjourned for the present. The other new street, Malet-street, being only 40 ft. wide, is to be lighted by the ordinary incandescent gas-burners used in other parts of the borough.

Lambeth.—Subject to an arrangement being effected with the London County Council in regard to the maintenance of tramway margins Wandsworth-road is to be paved with granite and creosoted deal, and the footways are to be repaired, at a total estimated cost of 3,128*l.* A communication has been received from Spring-gardens intimating that a petition for widening Norwood-road is engaging the serious attention of the Highways and Improvements Committees. An offer by the South London Electric Supply Corporation to substitute electricity for gas at their own expense to light Electric-avenue, Brixton, has been accepted. The Council has further agreed to pay 15*l.* 14s. 8d. per annum for five years for the eleven electric lamps to be put in lighting. An arrangement has been entered into with the South Metropolitan Gas Company for the gradual introduction of inverted burners for street lighting, and an agreement has been signed with the Gas Light and Coke Company as to the automatic lighting and extinguishing of lamps in that Company's district for the period of five years. The final certificate in favour of Messrs. John Greenwood, Ltd., the contractors for the new Town Hall, has been passed. This will bring the total amount paid to the builders up to 40,675*l.* 15s. 9d., and is in complete settlement.

Lewisham.—A deputation is to wait on the Main Drainage Committee of the London County Council on the 18th prox. with reference to the offensive smell from sewers in the district. The Hither Green and Catford Ratepayers' Association, having complained of the delay in the paving of Verdant-lane, the Town Clerk is to write informing them that the work has been deferred pending the result of an action against the South-Eastern Railway Company with regard to the widening of the eastern side of the road.

Poplar.—At the last meeting of the Borough Council the Public Health and Housing Committee reported having considered the dismissal by the magistrate of a summons taken against the owner of a *cul de sac* off Mellish-street, to enforce proper drainage and repair of such place, which is in a bad condition and drained into untrapped gullies. The proceedings were taken under sect. 100 of the Metropolis Management Act, 1855, and the effect of the decision is that, unless the freeholder is also the owner of the houses abutting, no proceedings can be effective to compel owners to repair such places. The Committee were advised that an appeal was not likely to be successful, and had therefore directed no further legal action be taken in the matter. The Committee had also requested the Works Committee to consider the desirability of arranging for the necessary work to be done by the Council at the place in question, and at other places under similar circumstances, the cost being apportioned upon the owners, and the Council thereafter accepting responsibility for maintenance.

St. Pancras.—Negotiations are proceeding between the Borough Council and the London County Council with regard to various points in connexion with the electrification of the tramways. A number of matters have been satisfactorily arranged. Additional property has been acquired at a cost of 725*l.* in order that the site of same may be thrown into the Prospect-terrace rehousing area. Advantage is to be taken of the tramway works which are to be carried out in Hampstead-road to put in ducts for electric mains. The cost of the work will be about 6s. 9d. the yard run, or a total, including all items, of 195*l.* To do the work at a later date would have cost 340*l.*

Stepney.—In connexion with the widening of Castle-avenue land is to be acquired from Mr. Ald. Harris and from the Metropolitan District Railway Joint Committee, at sums of 800*l.* and 318*l.* respectively. The London County Council, which is to contribute 2,000*l.* towards the cost, have approved of the plans for an underground convenience in Horseferry Branch-road, near Rotherhithe Tunnel.

Wandsworth.—The Borough Engineer has been instructed to arrange for part of the old course of the River Wandle to be filled in, and a fence erected on the new boundary when an exchange of land with Mr. J. S. Pike has been effected. The Highways Committee have decided in favour of a contribution of one-third of the net cost of street widenings to be made in connexion with the London County Council proposals for the construction of tramways along Southcroft-road and Mitcham-lane. The same Committee has been authorised to make arrangements for the execution of paving works in Streatham High-road rendered necessary by the construction of tramways there. Tenders are to be invited at once for paving of Parklands-road, Streatham, and tenders will shortly be invited for the paving of Eatonville-road, Balham; Kenlor-road, Tooting; and Welham-road, Streatham. Messrs. G. Harber & Co. are to pave Fallsbrook-road, Streatham, the contract price being 515*l.*, as against the Borough Engineer's estimate of 562*l.*

PROJECTED NEW BUILDINGS IN THE PROVINCES.

ABERDEEN.—Church hall, St. Margaret's. Mr. G. Irvine, architect, 231A, Union-street, Aberdeen.

Amersham.—Alterations and additions to residence, Chesham Bois, Mr. F. G. Rust, builder, 1, Higham-road, Chesham, Bucks; alterations and additions, The Lawns, Pollards Wood, Mr. G. E. Nield, architect, 222. Strand, W.C.; two houses, Parkfield-avenue, Mr. B. Stone, builder, 85, High-street, Chesham, Bucks.

Barwell (Leicestershire).—School. Mr. C. Fowler, architect, 33, Bowling Green-street, Leicester.

Benwell.—Schools, Atkinson-road. Mr. F. Dryden, architect, 6, Market-street, Newcastle-on-Tyne; Messrs. Davidson & Miller, builders, Newcastle-on-Tyne.

Bingham (Notts).—County School. Mr. L. Maggs, architect, Shire Hall, Nottingham; Mr. J. Walker, builder, Bingham, Notts.

Bloemfontein (Durham).—School (10,000*l.*). Mr. H. Rushworth, County Hall, Durham.

Bloxwich (Staffs).—Smelting-shed for the New Delaville Spelta Company, Ltd.

Bromley (Kent).—Additions, "Hyncroft," Cromwell-avenue, Messrs. Potter & Harveys, surveyors, 49, London-road, Sevenoaks, Kent; additions, "Mirniar," Madeira-avenue, Mr. V. Wilkins, architect, 24, Finsbury-square, E.C.; alterations to Lyric Theatre (700*l.*), Messrs. Baxter, Payne, & Lepper, surveyors, 10, Market-square, Bromley.

Chatham.—Alterations at The Welcome and Reform Club, Military-road, for the Rev. R. Hall.

Coatbridge (N.B.).—Messrs. Arnott's new premises (10,000*l.*). Plans by Messrs. W. Arnott & Co., boiler makers, Coatbridge, N.B.

Darlington.—School, Dodmire. Mr. G. Winter, Borough Engineer, Town Hall, Darlington.

Doncaster.—Block of shops and offices. Mr. E. Wilburn, architect, St. George Gate, Doncaster.

Dunstan.—Club and Institute. Messrs. White & Stephenson, architects, Grey-street, Newcastle-on-Tyne.

Durham.—School, Mount Pleasant, Mr. W. Rushworth, architect, Shire Hall, Durham;

County School, Tudhoe Grange, Mr. W. Rushworth, architect, Shire Hall, Durham.

Eddlewood (Hamilton, N.B.).—One hundred and forty houses (14,000*l.*). Mr. W. Inglis, 261, West George-street, Glasgow.

Edinburgh.—Police-station, McLeod-street. Mr. J. A. Wilkinson, architect, City-chambers, Edinburgh.

Elderslie (N.B.).—New golf club pavilion (2,000*l.*). Architect, Elderslie Estate, Elderslie.

Fatfield (Durham).—School. Mr. F. E. Coats, architect, Shire Hall, Durham.

Feltham (Middlesex).—Wesleyan church, Hanworth-road. Messrs. Charles P. Baker, Charlecote, Hounslow-road, and A. A. Moore, Cotham Villa, Victoria-road, joint treasurers.

Finghall (North Riding).—Chapel. Mr. R. Metcalfe, architect, Finghall, Yorks.

Folkestone.—Additions to 3, Wiltie-gardens. Mr. A. R. Bowles, architect, The Parade, Sandgate, Kent; Mr. J. G. Parsons, builder.

Glasgow. — Factory, Ladywell. Messrs. Miller & Black, architects, 58, Renfield-street, Glasgow.

Johnstone (N.B.).—Mills for Messrs. Finlayson and Co., Mr. E. Holden, architect, Oxford-street, Bolton; school (3,000*l.*), Messrs. Kerr & Watson, architects, Houston-street, Johnstone, N.B.

Motherwell (N.B.).—Depôt buildings. Mr. J. McCallum, Borough Surveyor, Town Hall, Motherwell.

Newcastle-on-Tyne. — Fifty cottages for Colonel Elliott. Mr. E. Cratney, architect, High-street, Wallsend.

Prestwick (N.B.).—Addition to Crippled Children's Home. Mr. J. K. Hunter, F.R.I.B.A., 51, Sandgate, Ayr, N.B.

Rotherham.—Additions and alterations to wagon works, Holmes, for Messrs. Harrison & Camm.

South Shields.—Bank premises, North-Eastern Banking Company. Mr. J. Morton, architect, 50, King-street, South Shields; Mr. Parkinson, builder, Newcastle-on-Tyne.

Tunstall.—New printing works, Scotia-road, for Mr. E. H. Eardley.

Wallsend-on-Tyne. — Concert-hall. Mr. E. Cratney, architect, High-street, Wallsend.

Watford.—New boys' grammar school, the Governors; adaptation of old grammar school for higher elementary school (1,000*l.*). Mr. A. R. S. Hallidie, Secretary to Herts Education Committee, Hertford.

Wembley.—Additions to the public offices. Mr. C. R. W. Chapman, Surveyor to Urban District Council.

Obituary.

MR. RICHARDSON.

The death, on January 8, is announced of Mr. Joseph Henry Richardson, of Shepherd's Bush-green, W. Mr. Richardson became a member of the Architectural Association in 1888. He formerly practised with Mr. F. T. White under the style of Messrs. Richardson & White, of King-street, Hammersmith, architects and surveyors; the firm dissolved partnership in February, 1904. Mr. Richardson was the architect of Hammersmith Town Hall and Council Offices, opened on July 22, 1897; he was one of the six architects nominated, six years ago, by the Borough Council to compete for the Hammersmith Central Library. He made the plans and designs of the branch free library, in Letchford-gardens, Willesden; of the new board-room and offices, with children's receiving home, and out-relief department, arranged in three blocks, in Goldhawk and Catherine roads, for the Hammersmith Board of Guardians, 1902-4; the Three Kings Hotel, West Kensington District Railway-station, 1902; for the reconstruction of the Wheatsheaf tavern, Goldhawk-road, 1900-1; the alteration and enlargement of the Phœnix Brewery, Notting Hill, 1894; Messrs. Waterlow & Son's warehouses in Appold and Earl streets, E.C., erected in 1896 at a cost of about 14,000*l.*; a block of residential flats in Askew-road (south side), Shepherd's Bush; buildings on the north side of Uxbridge-road, and several houses at Shepherd's Bush, for the Home Counties Land Company, Ltd., 1906-7, together with a block of seven houses, with shops, built at Shepherd's Bush for that Company at a cost of about 10,000*l.*; six houses and shops in Uxbridge-road, built by Messrs. Kingerlee & Sons, of Oxford, who tendered for 7,308*l.*; and many similar residential and business premises in that neighbourhood, for the recent development of which his professional services were largely employed.

MR. JOHN FERRIES.

The death has occurred of Mr. John Ferries, surveyor, of Banchory. The deceased had held for about fifteen years the post of Burgh Surveyor and Sanitary Inspector to the Town Council of Banchory.

General Building News.

PROPOSED CHURCH, MUSWELL HILL.

On the recommendation of the Bishop of London the Ecclesiastical Commissioners have allocated 10,000*l.* for the erection of a church in place of the temporary building of St. Peter's, Colney Hatch-lane, Muswell Hill. The plans are being prepared by Messrs. Caröe & Passmore, Architects to the Commissioners, and building, it is stated, will be begun in March.

COUNCIL SCHOOL, TONGWYNLAIS.

The Glamorgan County Council have built a new school at Tongwynlais. The school has accommodation for 316 boys and girls, and in addition possesses a large central hall for assembly and other purposes. Mr. Pugh Jones was the architect, and Mr. Stephen Shaile, Llandaff, the builder for the work. The heating, on the low-pressure system, was carried out by Messrs. Bevan Brothers, Swansea. The cost of the building has been about 4,354*l.*

COUNCIL SCHOOL, MACHEN, MON.

A Council school has been opened at Machen. It is composed of two departments, and has five classrooms for girls and boys grouped around a large central hall, with separate corridors and commodious cloakrooms adjoining, the accommodation in this department being for 350. The infants' department has four classrooms, with 200 places, abutting a marching-hall, and has a separate entrance, with cloakroom. Private rooms are also provided for the head teacher of each department, and the necessary storerooms and offices. The outside walls of the schools are faced with St. Julians best pressed bricks, with dressings of Monk's Park stone. The building contractor is Mr. A. J. Colborne, of Swindon, who has carried out the work at the contract price of 6,390*l.* 14s. 6d. The school was designed by Mr. R. L. Roberts, Abercarn, and Mr. J. B. Laughton, of Risca, carried out the duties of clerk of works.

PROPOSED SECONDARY SCHOOL, TORQUAY.

The joint Sub-Committee for Higher Education, representing the borough and county, have, it is stated, decided on the erection of a new secondary school proposed in the Upton Valley. The County Education Architect, Mr. Morris, has prepared sketch-plans for the proposed work, and these are to be submitted to the Education Committee with the recommendation that they be adopted.

COUNCIL SCHOOL, GOSPORT.

The foundation-stone was recently laid of the new Council school, which is in course of erection in Grove-road, Hardway, Gosport. The building will provide accommodation for 400, and the total cost will be 5,600*l.* Mr. E. J. Tench is the architect.

ROMAN CATHOLIC SCHOOL, GREENOCK.

The Dean of Guild Court have granted a warrant to the Trustees of the Roman Catholic Archdiocese of Glasgow to build an elementary and higher-grade school combined at Patrick-street, Greenock. The plans provide for a building of four stories, to accommodate 1,000 scholars, and to cost between 10,000*l.* and 10,000*l.* Mr. Walter R. Watson, Glasgow, is the architect.

GIRLS' HIGH SCHOOL, GLOUCESTER.

This new school, just opened, is placed in such a position as to give the best aspect (south-east) to the majority of the classrooms, and also afford room for a full-size hockey ground, tennis courts, and other outdoor games in the playing-field. Accommodation is for 350 girls. Opening direct from the main hall are four classrooms, two at each end, with folding partitions between them so that they may be thrown together on occasions. The entrances for senior and junior pupils are at the south and north ends of the main corridor, which corridor runs the whole length of the building, and passes along one side of the main hall. From this corridor are approached four more classrooms, each 24 ft. by 22 ft. 6 in. and 14 ft. high, as well as two staircases, each of which gives access to the upper floors. Separate lavatories and cloakrooms are provided for seniors and juniors, so placed as to be directly accessible from the entrance lobbies, whilst other doors of communication are given to the interior of the building, so that pupils assembling for school may have immediate access to their cloakrooms, and prepare themselves for school before entering the other parts of the building. Latrines and bicycle-sheds are also provided on each side, the former being approached by covered ways, and are so placed as to be easily accessible from the playground without entering the building. On the first floor are placed the art-room (at the north), and at the south end the laboratory, with balance-room, dark-room, and book-store attached. On the second floor are provided libraries for seniors and juniors; two kitchens, one for instruction and the other for practical cooking; the dining-room, giving accommodation for 127 pupils; a classroom for instruction in needlework, and four small rooms available for either practice-rooms, private studies, or emergency-rooms. The buildings are erected with local bricks and Bath stone dressings, and the roofs are covered with Staffordshire tiles; the floors and staircases of Hennebique ferro-concrete, executed by Messrs. Hobrough & Co., of Gloucester, and the floors covered with maple-wood blocks. The cloakrooms, entrance-lobbies, staircases, corridors, and main hall have dados provided and fixed by the Manu-Marble Company, of Gloucester; the class-rooms are plastered. The building is warmed with pipes and radiators on the low-pressure system, and this, together with the ventilation, has been executed by Messrs. Beaven & Sons, of Gloucester, under the direction of Mr. E. J. Cullis, C.E. The schools are lighted throughout by electricity, put in by Messrs. Mitchell & Co., of Gloucester. The whole of the builders' work has been carried out by Messrs. Wm. Crane, Ltd., contractors, of Nottingham, and Mr. W. H. Bush has acted as clerk of works. The architect is Mr. Walter B. Wood, of Gloucester.

BAPTIST INSTITUTE, SALISBURY.

In connexion with the Baptist chapel in Brown-street, new institute premises have just been opened. The plans of the building were drawn by Mr. A. C. Bothams, and consists of ground floor, upstair rooms for the caretaker, and a basement store.

PROPOSED ISOLATION HOSPITAL, SOLIHULL.

An inquiry was recently held at Solihull by Mr. J. Spencer Low, Inspector of the Local Government Board, into applications of the Solihull District Council to borrow 6,586*l.*, and of the Meriden District Council to borrow 5,092*l.*, the apportionment of each authority in the building of an infectious diseases hospital on land near Berry Hall, Solihull. Evidence was given by Mr. W. H. Ward, architect, who said the complete hospital provided for fifty-six beds, but at present it was only proposed to erect a four-ward block to accommodate half that number. The whole of the administrative and official buildings, however, would be erected. The building would be of brick, with tiled roof.

BUILDING DURING THE PAST YEAR AT LEITH.

The acute depression that was being experienced in the Leith building trade a year ago has unfortunately persisted, few buildings of any importance having passed through the Dean of Guild Court during the past year. Although the number of warrants granted during the year was seventy, as compared with thirty-four in 1907, the estimated value of the buildings is much the same, namely, 56,200*l.*, as compared with 58,674*l.* for 1907. The increased number of warrants is accounted for to some extent by the restriction in the number of minor warrants, these being mostly confined to small internal alterations. In recent years the value of buildings for which warrants were granted was as follows:—1903, 268,000*l.*; 1904, 173,000*l.*; 1905, 32,000*l.*; 1906, 179,700*l.*; 1907, 58,674*l.*; 1908, 56,200*l.* For the coming year the prospect is by no means bright, as little is heard of any proposed new buildings.

PROPOSED NEW MUSIC-HALL, DEWSBURY.

It is proposed to erect a new music-hall on the Manor House estate, Dewsbury, and the plans of Messrs. Chadwick & Watson, of Leeds, who are the architects of the scheme, have been passed by the local authorities. Accommodation for at least 2,000 people will be provided.

BUILDING IN NOTTINGHAM.

While there was a perceptible falling off in the building trade in Nottingham last year as compared with the previous year, the number of buildings erected has been large and somewhat at variance with the pessimistic statement so constantly heard as to the condition of trade. In 1907 new buildings (including dwelling-houses) reached a total of 1,997, while the figures for 1903 were 1,675. Dwelling-houses certified for occupation in 1907 numbered 1,216; last year there were little more than a thousand.

BUILDING AND IMPROVEMENTS IN BELFAST DURING THE PAST YEAR.

From statistics prepared by the City Surveyor, Mr. H. A. Cutler, it appears that during the past year plans for 911 buildings came under the notice of his department, and were approved, these being made up as follows:—564 houses, eight factories, forty-seven other large buildings, and 292 minor buildings. These represent altogether an estimated cost of 268,250*l.*, as compared with plans representing 274,925*l.* in the preceding year. As usual

the year has witnessed a good deal of important work in connexion with various schemes of improvement, and amongst these first place may be assigned to the question of sewage purification. In the course of the year Professor Letts, of Queen's University, who for the past ten years has been carrying on investigations and experiments with a view to the solution of this problem, presented the final in a series of valuable reports which have come from his pen, and the Surveyor forthwith proceeded with the preparation of a scheme embodying the ideas of the scientific expert. Just about the time that Mr. Cutler's report and drawings were ready, the long-awaited report of the Health Commission appeared, and as this suggested that a less expensive scheme than that outlined by Professor Letts and the Surveyor would suffice for Belfast, the joint Improvement and Public Health Committees gave instructions for information to be prepared showing the cost of this alternative proposal. The result showed that if the Health Commissioners' ideas were adopted there would be a saving between 90,000*l.* and 100,000*l.* in capital outlay. The Local Government Board held an inquiry into the scheme.

PROPOSED SEA WALL, PRESTWICK, GLASGOW.

The Prestwick Town Council have under consideration a proposal to lay out the land along the sea front from Station-road to Grangemuir-road, and to erect a sea wall to protect it. Mr. William Cowie, architect, Ayr, has prepared plans and an estimate of the cost. The scheme embraces the laying out of an area of land extending to about 11 acres, which would be intersected by walks connecting Burgh-road, Park-street, and Ailsa-street with a broad pathway immediately behind the sea-wall. The cost is estimated at about 5,000*l.*

PROPOSED BUILDINGS IN EASTBOURNE.

At a recent meeting of the Eastbourne Town Council, the Buildings Committee recommended, and it was agreed, that the following plans be approved:—D. E. Williamson (Spalding, Spalding, & Myers, architects), additions to York House, Royal-parade, referred to Finance Committee; A. Max Wilkinson (C. Breach, builder), additions to Warren Hill; A. W. Cheetham, detached house, Baslow-road; Vicar and Wardens of Holy Trinity Church (A. R. G. Fenning, F.R.I.B.A., architect), alteration and addition to Holy Trinity Church; A. E. Potter (Mitchell & Ford, architects, A. E. Potter, builder), ten houses, Desmond-road; Beach Laundry Company (J. D. Thompson, builder), addition to the Beach Laundry, Royal-parade East; A. de Mierre (F. G. Cooke, architect, B. Stevens, builder), detached house, Ashburnham-road.

BRANCH LIBRARY, MANNINGHAM.

The memorial-stone was recently laid in connexion with the new branch library which is being erected in Carlisle-road, Manningham. The library, when completed, will be a two-storied building, and is estimated to cost a total of 4,000*l.*, including the necessary furnishing. Mr. F. E. P. Edwards, the former City Architect, is the author of the plans, and Mr. W. R. Booth the contractor.

PROPOSED HOSPITAL, LEWES.

It is stated that the building of a new hospital for Lewes, estimated with site to cost 6,000*l.*, will be begun in a few months. The structure is to be erected on the Downs, at the back of the Civil Prison, and facing Nevill-road. The design is the work of Messrs. E. Runtz & Ford, of Lewes.

PROPOSED ALTERATIONS TO AN ABERDEEN THEATRE.

Messrs. Brown & Watt, architects, Aberdeen, have prepared and received the approval of the Plans Committee of the Aberdeen Town Council to a scheme of alteration proposed to be carried out on Her Majesty's Theatre, Guild-street. Those buildings are to be opened as a music-hall, and the alterations, which are estimated to cost about 2,000*l.*, include the cleaning and redecoration of the building.

EXTENSION OF THE SHIREHOUSE, NORWICH.

The additions that have been made to the Shirehouse at Norwich have now been completed, and at the last meeting of the Norfolk County Council it was stated that the work was done within the estimated figure. The contract was for 12,240*l.*, and the result worked out at 12,233*l.* Mr. Tench was the architect for the work.

BUSINESS PREMISES, BRISTOL.

The premises, Nos. 75 to 79, Victoria-street, where a fire occurred last summer, have now been reinstated, under the superintendence of Messrs. La Trobe & Weston, architects, and many improvements have been introduced. The warehouse floors are formed with "Fram" blocks. The flat roofs are similarly formed, and covered with asphalt. The partitions and ceilings are covered with "Fram" sheets. The whole area of the site being covered, much of the building is lighted by skylights, and these are also fireproof, being executed in wire-woven glass in lead-covered steel bars.

COTTAGE HOSPITAL, KELSO.

The new cottage hospital at Kelso has just been opened. The hospital, which now includes the old Kelso Dispensary, has been built from the plan of Mr. Sydney Mitchell, architect.

NAIRN BUILDING TRADE IN 1908.

Building has been exceedingly brisk, and during the year twenty petitions were passed through the Dean of Guild Court, involving a total cost of 13,620*l.*, which is the largest amount sanctioned at that Court for seven years. The principal erection is the public school, which is being built on Millbank Lands, close to the railway. It will probably not be completed until the autumn. This building involves a cost of 6,300*l.* It is understood (says the *Elgin Courant and Courier*) that several new buildings will be commenced almost immediately, so that the prospects are very satisfactory.

THE BUILDING TRADE IN GLASGOW AND DISTRICT.

In Glasgow and the surrounding district a moderate amount of building went on during the past year in villas, cottages, and terrace houses, particularly on the outskirts of the city, but many of the houses built a year ago are still vacant. There has been more demand recently for villas than there was ten or a dozen years since, but that demand has now been more than met. The building of tenement property was greatly restricted throughout the year. Speculative builders complain that the fall in feu-duties and ground annuals following on the agitation for the taxation of land values has rendered operations unremunerative. In the returns of the number of linings granted by Glasgow Dean of Guild Court applications for houses of two apartments head the list, while the number of applications for houses of one apartment continue to decline. The number granted in the city was only forty-seven—the lowest for this class of house since 1832. There was a great fall both in the number and value of public buildings in 1908, the linings being just half in number and in value—59,875*l.*, against 156,395*l.* passed the previous year, or a decrease in value of 96,520*l.* The number of linings granted by the Dean of Guild Court was fewer than those of the previous year by seventy-eight. The total valuation was 894,716*l.*, as against 898,105*l.* for the previous year, or a decrease of 3,389*l.* Linings were granted for nine new streets of 2,077 lin. yds., as compared with fourteen of 5,461 lin. yds. in 1907. Although alterations and additions to existing property show a decrease of sixty-nine in number, there was an increase in value of 109,298*l.*, the value for 1908 being 228,334*l.*, as against 119,036*l.* for the previous year. Linings for warehouses, stores, and workshops numbered 100, of a value of 280,171*l.*, as against 133, of a value of 217,864*l.* in 1907, thus showing a decrease in number but an increase in value. Churches, halls, and schools, although the same in number as the previous year, show a falling-off in value of 32,005*l.* Under this head nine linings of 30,130*l.* were passed during 1908, as compared with the same number of 62,135*l.* in value for 1907. The trade in Perth was equally dull so far as new buildings were concerned, but a good deal of alterations were carried out on several churches. A considerable period has elapsed since the building trade in Paisley was so bad as it was during 1908. From the Dean of Guild Court statistics issued at the end of October last it appears that the total valuation of new buildings and alterations was 85,630*l.*, a decrease of 32,790*l.* as compared with the preceding year. In Greenock operations have been confined chiefly to the erection of villas and small cottages. Roughly, the total value of work done within the burgh of Greenock during the year may be put at about 30,000*l.* In Port Glasgow the number of new buildings has been fewer than for some years past. Alterations and additions have also been made on various public and private works. In Gourock the estimated value of the year's work was 10,000*l.* The building trade in Inverness was exceptionally dull during 1908, and only a small number of contracts were undertaken during the year.

Stained Glass & Decoration.

ST. JOHN'S CATHEDRAL, HONG KONG.

A stained-glass window, to the memory of the late Bishop Hoare, who was drowned in the 1906 typhoon, was recently unveiled by Sir Frederick D. Lugard. The subject of the window, which was the work of William Morris & Co., Ruskin House, Ltd., Westminster, is the "Vision of St. John in the Isle of Patmos," while at the base are depicted the appropriate subjects of "The Call of the Apostles by the Sea of Galilee," "The Storm on the Lake," and "Christ Walking on the Sea."

BRAUNTON CHURCH, NORTH DEVON.

The west window of this ancient church has been filled with stained glass by Messrs. Percy Bacon & Brothers. The window is of seven lights, divided by a transom. The subject depicted by Mr. Bacon is "Our Lord in Majesty," surrounded by typical saints from all periods of Church history. The east window is shortly to be treated by the same firm of artists.

Appointments.

BRITISH MUSEUM.

Mr. A. Hamilton Smith has been appointed Keeper of the Department of Greek and Roman Antiquities in succession to Mr. Cecil Smith, the newly-appointed Director of the Victoria and Albert Museum.

ESTATE EXCHANGE.

Mr. V. A. Hillier, who has served under his two predecessors, Mr. Sturt and Mr. Luke Edmenson, now the Secretary of the Auction Mart Company, has been appointed Secretary to the Estate Exchange.

DRAPERS' COMPANY.

The Master and Wardens have appointed as curator of their gallery Mr. E. A. Lewis, who for more than thirty years has been with Mr. J. L. Rutley, of Great Newport-street, St. Martin's-lane, picture dealer and expert.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.

The partnership hitherto subsisting between Messrs. Campbell & Handman, of 9, New Broad-street, London, E.C., contractors for wharves, jetties, etc., terminated on the 31st ult. Mr. C. H. Campbell continues his business as a dredging contractor at the same address.

MEMORIAL TO SIR GEORGE LIVESEY.

With reference to the steps it has been decided to take to perpetuate the memory of the late Sir George Livesey, the Committee having the matter in hand desire to announce that contributions to the fund should be sent to the Secretary of the Institution of Gas Engineers, 39, Victoria-street, Westminster. A sum of at least 10,000*l.* is required for the object in view—the endowment of a Livesey Professorship in Gas Engineering and Fuel at the Leeds University—and contributions both small and large will be welcomed.

UNIVERSITY OF LONDON.

The University Extension Board have arranged for the delivery of two central courses of lectures in the University of London, Imperial Institute-road, South Kensington, S.W., as follows:—(1) *Renaissance (and Modern) Architecture*, by Mr. Banister Fletcher, F.R.I.B.A., on Mondays, at 8 p.m., beginning January 11. The lectures will comprise the Renaissance (and Modern) Architecture of England, Germany, Belgium, Holland, and Spain, and will be very fully illustrated by lantern slides and diagrams. This course is Part II. of the third year's course of study on the subject, but it will form a complete course of lectures in itself. (2) *English and French Painters*, by Mr. Percival Gaskell, R.B.A., on Tuesdays, at 3 p.m., beginning January 12. The lectures will also be given in the evening of the same day at 8 p.m. These lectures will have special reference to the work of the painters in the National Gallery, and will be very fully illustrated by lantern slides. This course is Part II. of the third year's course of study on the subject, but it will form a complete course of lectures in itself. Tickets and further information may be obtained on application to the Registrar of the University Extension Board, University of London, South, Kensington, S.W.

THE BRITISH INSTITUTION SCHOLARSHIP FUND.

This fund derived its origin from the "British Institution for Promoting the Fine Arts in the United Kingdom," which was founded in 1805 by a number of distinguished amateurs, with the purpose of encouraging art by exhibitions of both living and deceased artists, by buying pictures, and by giving premiums. The Institution practically ceased to exist with the expiration in 1870 of the lease of the building in which its annual exhibitions had been held. Nothing, however, was done by the Trustees of the Institution with the funds standing in their names till 1885, when they applied to the Charity Commissioners for the establishment of a scheme for the future management and regulation of the fund as a

charitable trust. The scheme finally drawn up by the Commissioners, in 1887, provided for the establishment of a "charity" which was to apply the annual income of the fund, after payment of the expenses of administration, to the encouragement of the study of art by young British artists, by founding and maintaining scholarships to be called "British Institution Scholarships." The scholarships are of the value of 50*l.* a year and tenable for two years, which period may be extended to not more than four years at the discretion of the Trustees. The number of scholarships is ten, and they are awarded according to a certain rotation, five being allotted to painting, two to sculpture, one to architecture, one to designing in black and white, and two to engraving, etching, wood-cutting, or lithography.

INTERNATIONAL EXHIBITION OF INVENTIONS, ST. PETERSBURG.

The International Exhibition of New Inventions will be held at St. Petersburg during the interval May 4-June 23. The classes of exhibits in the "general" section comprise lighting, cooking, etc., fire-brigade services, electricity, industries and manufactures, and photography and the fine arts.

REINFORCED CONCRETE CONSTRUCTION.

A course of six lectures on this subject will be given by Mr. C. F. Marsh, M.Inst.C.E., at the City and Guilds Technical College, Leonard-street, City-road, on Tuesday evenings, at 8 p.m., commencing on January 19. The course is intended for engineers and architects, and will deal with the properties of the material, its behaviour under loading, methods of calculation, and the application of reinforced concrete to structures.

WILLING'S PRESS GUIDE.

Messrs. J. Willing, jun., Ltd. (125, Strand), have just issued their well-known Press Guide. The present is the 36th annual issue of a useful and very handy and well-arranged guide to the Press, the price of which is 1s.

BIRMINGHAM CITY COUNCIL.

At the meeting of the City Council on the 5th inst. it was decided to purchase land at the corner of Digbeth and Allison-street, as a site for a new police-station, for 4,000*l.* The total cost of the scheme would be, it was estimated, about 24,000*l.* The Council also authorised the erection of a fire-station in Albion-street, at an estimated cost (including furnishing, etc.) of 11,170*l.* Subsequently a discussion arose as to whether the Committee concerned in these proposals should follow precedent and invite a number of architects to send in competitive plans, or whether it was desirable to ask one architect to send in plans.—Alderman Hunt reminded the Council of the existence of a regulation that in the erection of a building costing more than 10,000*l.* competitive plans should be obtained from architects. He hoped that rule would be adhered to.—Alderman Beale said it was time they came to an understanding with reference to the old rule requiring that competitive plans should be obtained from architects when the cost of the building exceeded 10,000*l.* The regulation had been disregarded again and again by the Tramways and Electric Supply Committees, and he believed by other committees. He did not think the Committee should be trammelled by that rule, as the conditions at the time it was adopted did not now exist. The rule was agreed to because all the Corporation work was drifting into the hands of one firm. Now the architects had a fair oportunity of showing their skill in designing. The old rule was a dead letter, and he would like it abolished or modified.—The Lord Mayor said he agreed that a hard-and-fast rule should be revised from time to time, and he hoped steps would be taken now to further consider the matter. In the meantime it was better to observe the rules.—Mr. Walthall said the Tramways Committee employed four architects. The object of the rule was to prevent one architect getting the whole of the work.—Mr. Rudland thought that, with the exception of a highly technical matter, competitive plans should always be obtained where a building was to cost more than 10,000*l.*—Alderman Clayton suggested that the matter should be referred to the General Purposes Committee to consider and report.—Mr. Brooks, in reply, said the police-station would be a building of a special character, which must conform to the regulations of the Home Office. If he were left to use his own judgment he should prefer one architect to prepare the plans for the building, as he thought the Council would be better served than by throwing the work open to competition. However, after the views which had been expressed, he would say the Committee would conform to the standing orders by inviting such a number of architects as they thought fit to submit plans, and then bringing one or more plans to the Council.

TRADE UNIONS.

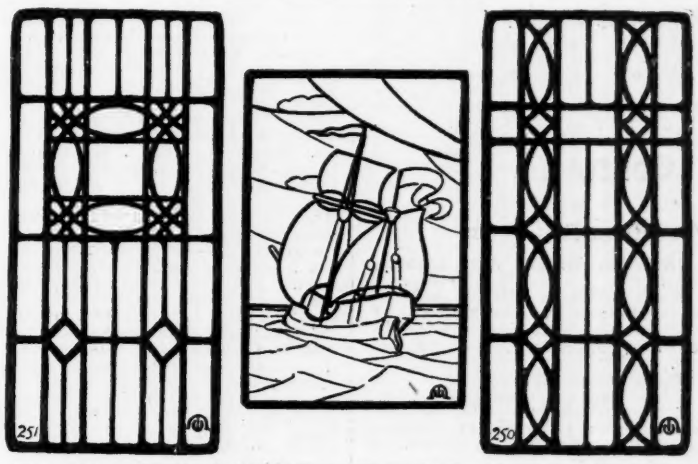
In the table of the forty-six leading trade unions prepared by the Registrar of Friendly Societies, the following are included:—Amalgamated Society of Joiners, 66,362 members; income, 241,114*l.*; expenditure, 213,071*l.*; funds in hand, December 31, 1906, 122,323*l.* Operative Bricklayers, 31,267 members; income, 53,518*l.*; expenditure, 58,708*l.*; funds in hand, 99,067*l.* National Amalgamated House and Ship Painters, 16,519 members; income, 42,184*l.*; expenditure, 43,866*l.*; funds in hand, 40,773*l.* United Operative Plumbers, 11,247 members; income, 28,190*l.*; expenditure, 28,992*l.*; funds in hand, 26,748*l.* National Operative Plasterers, 7,832 members; income, 10,631*l.*; expenditure, 12,753*l.*; funds in hand, 24,620*l.* Society of Operative Stonemasons, 13,781 members; income, 22,213*l.*; expenditure, 26,992*l.*; funds in hand, 11,607*l.*

RUSKIN HOUSE.

Ruskin House, Ltd. (Rochester-row), send us an interesting form of almanac, arranged to run for two years, an almanac being on cards for each month enclosed in a thick brown-paper case; each card having on the back of it a report.—Councillor Inglis moved that the report be referred back to the Higher Education Sub-Committee in order that they might consult with Mr. Spurr in order to ascertain whether Mr. Creer's recommendation of tieing the building could be carried out, and that the building be not closed.—Alderman Purnell seconded, but the amendment was lost, and the motion was then agreed to.

ABERDEEN GRANITE TRADE.

The granite trade of Aberdeen has experienced a somewhat indifferent year. The monumental department, which is really the backbone of the trade, has been fairly good, and a moderate volume of business has been done, although not quite up to that of former years. In the building department of the trade there has been a great lack of big contracts for building stone. Most of the orders that came to hand were for small jobs, on which contract prices were very keenly cut. The import of foreign granite to Aberdeen during the past year is the largest on record, the total for 1907-08 being 27,390 tons, as compared with 24,942 tons in 1906-07. This heavy import of foreign material is largely owing to the severe depression in the home building trade. In such quarries as Rubislaw there are thousands of tons of excellent building stone lying in the way of free quarrying operations, and with no immediate demand for that material it does not pay the proprietors to handle it twice in order to get at the larger blocks. The result is that monumental polishers having often to wait for their rough material, they are obliged to fall back on the Scandinavian stone, which suits their purpose quite well. At Kemnay Quarry business has recently been exceptionally brisk on account of several important orders from England. In the monumental department, however, orders are now coming in very slowly, and employers are falling back upon stock work to keep their quarries going.—*Glasgow Herald.*



Suggestions for Leaded Windows: From the Ruskin House Almanac.

design of some article of decorative house work made by the firm. We give a reduction of three of these sketches, for the treatment of leaded windows.

YORK EXHIBITION BUILDINGS.

An extraordinary meeting of the York Education Committee was held on the 11th inst. to consider a report from the Higher Education Committee with reference to the condition of the Exhibition Buildings. Councillor Fowler Jones presided. The Chairman explained that the Higher Education Sub-Committee met on Saturday afternoon last to consider a report which had been specially prepared on the condition of the building, and passed the following resolution:—"That after having considered the serious report of Mr. W. H. Brierley, architect, on the condition of the large hall of the Exhibition Building, the Higher Education Sub-Committee direct that the building be closed to the public at once."—Mr. J. H. Mason, Secretary to the Committee, read the report from Mr. W. H. Brierley, architect, in which it was stated that the building was erected thirty years ago as a temporary structure. It was on the whole well-designed for its purpose, and had stood much longer than could ever have been intended. It was constructed entirely of timber and of scantlings of the minimum strengths, knocked together in a somewhat rough and ready fashion, such as was only adopted for temporary structures. The building was very exposed to the south and west, and the wind pressure on such a large area must at times be very considerable. After describing the condition of the roof and the general state of the building, Mr. Brierley made the following suggestions:—"I have carefully considered how the building can be strengthened to meet your present engagements, and I submit herewith a drawing for bracing and stiffening it up, but the suggestions would only be temporary, and the repairs immediately required will cost several hundred pounds, and it is in my opinion very doubtful whether any further expenditure on such a temporary structure is justified. The building has more than served its purpose, and I think it ought now to be taken down."—A report by the City Surveyor, Mr. Spurr, was also read, and recommendations were made that certain works should be carried out.—The Chairman said that Mr. Creer presented a report in 1899 which very nearly agreed with Mr. Brierley's report.—The Chairman moved the adoption of the

WASTE LIQUOR FROM SUCTION-GAS PLANTS.

The waste liquor from the scrubber of a suction-gas plant has a very offensive odour, owing to the presence in it of a considerable quantity of sulphuretted hydrogen. The discharge of this waste liquor into the public sewers before it has been deodorised has been prohibited in some cases by the local sanitary authority. Permanganate of potash will decompose the sulphuretted hydrogen and deodorise the liquor, and this compound has been used in some places. But the addition of sufficient permanganate to completely deodorise all the waste liquor is a costly process, and Messrs. Tangyes, Ltd., the well-known engineers, are now offering for sale an apparatus called Tangyes' Patent Deodoriser, which they claim is effective and inexpensive. It is simple in action, automatic, and does not have to be fed with any chemical.

SMITHFIELD GATEWAY FUND.

Of the amount (2,100*l.*) required for the preservation of the early XIIIth century gateway, a sum of about 400*l.* yet remains to be raised by public subscription. Amongst the contributors to the purchase fund are Sir Aston Webb, R.A., Miss Mitchell, Miss F. A. Phillips, and Mr. A. Frewin (100*l.* each), the Carpenters' Company (50 guineas), Miss S. Minet (50*l.*), Mr. H. Wilson Holman (25*l.*), Mr. F. G. Hilton Price, director S.A. (20 guineas), Mr. E. A. Webb, F.S.A. (5 guineas), Dr. Freshfield (5*l.*), Mr. P. Norman (5*l.*), Mr. Ernest George, Mr. W. H. St. John Hope, Rev. Dr. Cox, Mr. Seymour Lucas, R.A., Mr. E. J. May, Mr. J. Howard Colls, and Messrs. Dove Brothers.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xviii.; Auction Sales, xxviii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

JANUARY 31.—**South Bank-in-Normanby.**—Plans are invited for new Town Hall and Council Offices. Particulars may be obtained from the Clerk, South Bank-in-Normanby.

MARCH 31. — **Middlesbrough.** — NEW LIBRARY.—The Free Library Committee invite plans for proposed new Library to be erected in Dunning-road and Grange-road, East Middlesbrough. Premiums of 50*l.*, 30*l.*, and 20*l.* Conditions, with plan of site, may be obtained on application to Mr. Alfred Sockett, Town Clerk, Municipal Buildings, Middlesbrough. Deposit, 2*l.* 2s. For further particulars see advertisement in our issue of December 26.

Contracts.

BUILDING.

JANUARY 16. — **Bowdon Lodge, Altrincham.**—SCHOOL.—For Altrincham County High School for Girls, Bowdon Lodge, Cheshire. Messrs. Sankey & Cubbon, architects, Manchester. Names to Mr. Jos. Howarth, Clerk to the Committee, Education Offices, Market-street, Altrincham, together with the sum of 2*l.* 2s.

JANUARY 16.—**Dore.**—VILLA.—Erection of two detached villas, at Dore. Bills of quantities not later than January 16, after which date plans, etc., may be seen at the office of Mr. J. W. Winter, architect, surveyor, and valuer, St. Peter's-close, York-street, Sheffield.

JANUARY 16. — **Hale.** — SCHOOL.—For Altrincham Higher Elementary School, Queen's-road, Hale, Cheshire. Mr. P. D. Lodge, architect, Manchester. Names to Mr. Jos. Howarth, Clerk to the Committee, Education Offices, Market-street, Altrincham, together with the sum of 2*l.* 2s.

JANUARY 18. — **Birkenhead.** — EXTENSIONS TO THE INFECTIOUS DISEASES HOSPITAL, FLAYBRICK-HILL.—The Corporation of Birkenhead invite tenders for the erection and completion of extensions to the Infectious Diseases Hospital, Flaybrick-hill. Plans, etc., can be seen, and bills of quantities, etc., obtained, on application at the office of Mr. Charles Brownridge, M.Inst.C.E., Borough Engineer and Surveyor, upon a deposit of the sum of 1*l.* 1s.

JANUARY 18.—**Blaydon.**—BOARD OFFICES, ETC.—The Burial Board of Blaydon invite tenders for the erection of Board Offices and Superintendent's House in the Cemetery at Blaydon. Application for bill of quantities (together with a cheque for 2*l.*) should be sent to Mr. J. H. Rogers, Clerk to the Board, 53, Tyne-street, Blaydon-on-Tyne.

JANUARY 18. — **East Stonehouse.** — ADAPTING.—East Stonehouse U.D.C. invite tenders for the work in adapting part of the constable's house at Devil's Point, East Stonehouse, for the purpose of a public convenience. Names to Mr. C. H. Trounce, Surveyor, Surveyor's Department, Town Hall, Stonehouse, Devon.

JANUARY 18. — **Eccles.**—HOUSES.—The Corporation of Eccles invite tenders for the erection of houses in Corporation-road, Eccles. A copy of the bill of quantities and general conditions may be obtained at the Town Clerk's Office on depositing the sum of 1*l.* 1s. The plans may be inspected, and further particulars obtained, at the office of the architect, Mr. Luke Barlow, 3, King-street, Manchester.

JANUARY 18. — **Halifax.** — WALL.—Halifax Parks Committee of the Halifax Corporation invite tenders for rebuilding retaining wall at Pellon Recreation Ground. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. James Lord, C.E., Borough Engineer, Town Hall, Halifax, upon payment of the sum of 1*l.*

JANUARY 19.—**Bridlington.**—RESIDENCE.—Erection and completion of a residence in North-street, for Mr. A. J. Douglas. Drawings, etc., may be inspected at the office of Mr. J. Earnshaw, architect, Carlton House, Bridlington.

JANUARY 19. — **Plymouth.** — SKYLIGHT, ETC.—The Guardians of the Poor of Plymouth invite tenders for providing and fixing two ventilators and new skylight in the roof of the kitchen at the Workhouse; also for the provision of a mortuary slab, with necessary accessories. Specifications may be obtained at the office of Mr. W. Adams, Clerk to the Guardians, 13, Princess-square, Plymouth.

JANUARY 19. — **Thrybergh.** — CLUB.—Erection of working men's club, Thrybergh, near Rotherham. Plans may be seen, and quantities obtained, at 14, Regent-street, Barnsley. Mr. P. A. Hinchliffe, A.R.I.B.A.

JANUARY 20. — **Honley.** — ALTERATIONS TO SHOP PREMISES.—Tenders are invited for the various works required to be done in proposed alterations to shop premises in Eastgate, Honley, for the Honley Co-operative Society, Ltd. Plans may be seen, and bills of quantities obtained, at office of Mr. J. Berry, architect and surveyor, 3, Market-place, Huddersfield.

JANUARY 20.—**Stillorgan and Kingstown.**—DISPENSARIES, ETC.—The Rathdown Board of Guardians invite tenders for the building of two dispensaries with caretakers' residences, one at Stillorgan, co. Dublin, and the other at Patrick-street, Kingstown. Plans, etc., by Mr. George T. Moore, C.E., 1 and 2, Foster-place, Dublin, architect, can be seen at his office, or at the office of the Clerk of the Union, Loughlinstown. The quantities have been prepared by Mr. James Mackay, 58, Dame-street, Dublin, and a copy can be had by each competitor from the Clerk of the Union on deposit of 1*l.* for each.

JANUARY 20. — **West Derby.** — PROPOSED ALTERATIONS, ETC., AT DEYSBROOK HOUSE, DEYSBROOK-LANE, WEST DERBY.—The Guardians invite tenders for the above from contractors within the West Derby Union, Township of Toxteth Park, or the Parish of Liverpool. A set of quantities can be obtained from Mr. Harris P. Cleaver, Clerk to the Guardians, Union Offices, Brougham-terrace, West Derby-road, Liverpool, on payment of 2*l.* 2s. Specifications and drawings can be seen at the office of the architect, Mr. C. H. Lancaster, Brougham-terrace, West Derby-road, Liverpool.

JANUARY 21. — **Cork.**—COTTAGES.—Cork R.D.C. invite tenders for building 157 labourers' cottages and fencing same number of cottage plots. Plans, etc., and tender forms for the works can be obtained from the Clerk to the R.D.C. on payment of 5s.

JANUARY 22. — **Inverness.** — HOUSES.—The Highland Railway Company Directors invite tenders for the mason, carpenter, slater, plaster, plumber, painter, and glazier works for a block of two houses for workmen at Acheilidh Crossing Loop, Rogart Bank, between Lairg and Rogart Railway Stations. Plans, etc., may be seen with Mr. William Roberts, the Company's Engineer-in-Chief, at Inverness, or with the Stationmaster at Rogart.

JANUARY 22. — **Poulton.** — FOR NEW BUILDINGS IN CONNEXION WITH EXTENSION OF REFUSE DESTRUCTOR.—The Health Committee of the Wallasey U.D.C. invite tenders for the erection of new buildings in connexion with the intended extension of refuse destructor, Gorsey-lane, Poulton, in accordance with plans, etc., prepared by Mr. W. H. Travers, A.M.Inst.C.E., District Engineer and Surveyor, Public Offices, Egremont, Cheshire. The plans, etc., may be seen, and specification, etc., obtained, at the District Engineer's Office on payment of the sum of 2*l.*

* JANUARY 23. — **Penkridge (near Stafford).**—SCHOOL.—The Staffordshire Education Committee invite tenders for new Council school and also a cookery room at Penkridge, near Stafford. See advertisement in this issue for further particulars.

JANUARY 25. — **Christchurch.** — INFIRMARY.—The Guardians invite tenders for the erection of an infirmary at the Workhouse, Fairmile, Christchurch. Full particulars, with plans, etc., may be seen at the Board-room at the Workhouse. Copies of the bills of quantities and forms of tender from Mr. A. Druitt, Clerk to the Guardians.

JANUARY 25.—**Litherland.**—COOKERY AND LAUNDRY CENTRE.—Lancashire Education Committee invite tenders for the erection of a cookery and laundry centre at Lander-road Council School, Litherland, near Liverpool. The plans may be seen, and bills of quantities obtained, at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, by payment of a deposit of 2*l.*

JANUARY 25.—**Omagh, Ireland.**—BANK.—Tenders are invited for a new bank at Omagh. Messrs. Blackwood & Jury, MM.R.I.A.I., architects, 41, Donegall-place, Belfast.

JANUARY 25. — **Sacriston.**—CLUB.—The Committee of Sacriston Workmen's Club invite tenders for the erection and completion of new workmen's club at Sacriston, co. Durham. Drawings, etc., and conditions of contract may be seen, and forms of tender may be obtained, at the architect's office, 22, Durham-road, Blackhill, co. Durham.

JANUARY 26.—**Belfast.**—ADDITION TO THE MUNICIPAL TECHNICAL INSTITUTE.—The Corporation of Belfast invite tenders for the erection of an addition to the Municipal Technical Institute. Drawings, etc., may be seen, and schedule of quantities (prepared by Mr. S. C. Hunter) and form of tender can be obtained, at the office of the architect, Mr. Samuel Stevenson, 83, Royal-avenue, Belfast, on payment of 2*l.* 2s.

JANUARY 26. — **Pontardulais.**—VILLA RESIDENCE.—Erection of a large villa residence, Bolgoed, Pontardulais. Full particulars may be had from Mr. W. Beddoe Rees, architect, 3, Dumfries-place, Cardiff, and plans and specification may also be seen at Pontardulais.

JANUARY 27. — **Otford, Sevenoaks.** — HOSPITAL WORK.—Sevenoaks R.D.C. invite tenders for certain works at the North Isolation Hospital at Otford, including repairing and re-erection of various temporary buildings, the conversion of one into a discharging block, tar paving, and repairs to the hospital. Drawings, etc., may be inspected, and forms of tender obtained, at the office of Mr. George F. Carnell, Clerk of the Council, 130, High-street, Sevenoaks.

JANUARY 30.—**York.**—GRAND STAND.—The Executive Committee of the York Historic Pageant invite tenders for the construction of a temporary timber grand stand (to seat about 5,000 persons) in the gardens of the Yorkshire Philosophical Society at York. Drawings may be seen, and specification, etc., obtained, from Mr. F. W. Spurr, City Engineer, Guildhall, York. 2*l.* 2s. to be deposited for specification and quantities.

FEBRUARY 1.—**Cricklewood and Kempton Park.**—COTTAGES AND COAL BAYS.—The Metropolitan Water Board invite tenders for the construction of coal bays, fitting and other workshops stores, lodge, cottages, etc., at Cricklewood, and cottages, etc., at Kempton Park, in the County of Middlesex. Forms of tender, etc., may be obtained from the Engineer, Staines Reservoirs Communication Works, The Firs, Southern-road, Fortis Green, East Finchley, N., on the production of an official receipt for the sum of 10*l.*, which sum must be deposited with the Accountant to the Board, Savoy-court, Strand, W.C.

* FEBRUARY 1.—**Tidworth.**—SHEDS, ETC.—The War Department invite tenders for Army Ordnance receiving shed, general stores, offices, etc.; also clothing, camp, and mobilization stores at Tidworth. See advertisement in this issue for further particulars.

* FEBRUARY 2.—**Lowestoft.**—POST-OFFICE.—Tenders are invited for the enlargement of Lowestoft Post-office. See advertisement in this issue for further particulars.

* FEBRUARY 3.—**Barnsley.**—ADDITIONS.—The Commissioners of H.M. Works, etc., invite tenders for additions to the Post-office at Barnsley. See advertisement in this issue for further particulars.

* FEBRUARY 3.—**Laindon.**—ALTERATIONS, ETC.—The Poplar Board of Guardians invite tenders for iron buildings and making additions and alterations to existing buildings, etc., at Laindon Branch Workhouse. See advertisement in this issue for further particulars.

FEBRUARY 4. — **Swansea.**—HOUSES.—The Swansea Harbour Trustees invite tenders for the erection of six dwelling-houses at Port Tennant, Swansea. Drawings, etc., can be inspected, and forms of tender obtained, at the Harbour Offices, Swansea.

FEBRUARY 8.—**Armathwaite.**—SCHOOL AND HOUSE.—Cumberland Education Committee invite tenders for the whole or any of the several trades required in the erection and completion of a mixed school and master's house at Armathwaite. Deposit of 1*l.* 1s. for a full set of quantities, or 10s. 6d. for each separate trade. Mr. Geo. Dale Oliver, F.R.I.B.A., County Architect, Carlisle.

* FEBRUARY 8.—**Pendleton.**—SCHOOL.—The Salford Education Committee invite tenders for the erection of a school for about 388 boys. See advertisement in this issue for further particulars.

* FEBRUARY 9. — **Walthamstow.** — SCHOOL. — The Walthamstow Education Committee invite tenders for Higher Elementary School on the Green Leaf-road site. See advertisement in this issue for further particulars.

* FEBRUARY 20. — **Redhill.**—SCHOOL.—The Reigate Education Committee invite tenders for an elementary school at Cromwell-road, Redhill. See advertisement in this issue for further particulars.

MARCH 2. — **Stornoway.** — SPIRE. — The Deacons' Court of the United Free English Church, Stornoway, invite offers for the erection of spire for church. Plans, etc., to be seen in the hands of Mr. Neil Maccallum, Clerk to Deacons' Court, Stornoway.

NO DATE. — **Ben Rhydding.**—VILLAS—All trades, for the erection of two villas at Ben Rhydding. Deposit 5s. For quantities apply Mr. Charles H. Brooke, architect, 7, Cookridge-street, Leeds.

NO DATE. — **Hurworth-on-Tees.**—INN.—The proprietor of the City Brewery, Durham, invites tenders for pulling down and rebuilding the Emerson Inn, Hurworth-on-Tees. Names and addresses, together with the trade or trades required, to Mr. W. T. Aggutter, architect, Horse Market, Darlington.

NO DATE. — **Newport.** — HOSTEL. — Erection of students' hostel, at the Harper Adams Agricultural College, near Newport, Salop. Apply to Mr. A. E. Lloyd Oswell, architect, Dana-chambers, Shrewsbury. Quantities will be supplied on payment of 1*l.* 1s.

NO DATE.—**Wetherby.**—POST-OFFICE.—Erection of a new post-office, Market-place, Wetherby. Bills of quantities from Messrs. Howorth & Howorth, architects, etc., Old Bank-chambers, Cleckheaton.

* NO DATE. — **Wrexham.** — CHURCH, ETC.—Tenders are invited for:—(1) A church at Hightown, Wrexham; (2) for moving existing building and forming boundary wall. See advertisement in this issue for further particulars.

ENGINEERING, IRON, AND STEEL.

JANUARY 18. — **Glasgow.**—WAGONS.—Glasgow Corporation invite tenders for the supply and delivery at their gasworks of thirty new or good second-hand 10-ton spring buffer railway wagons. Mr. A. W. Myles, Town Clerk, City Chambers, Glasgow.

JANUARY 20.—**Belfast.**—APPARATUS.—The Baths and Lodging-house Committee invite tenders for the erection of apparatus for the aeration, filtration, and heating of the water used in Swimming Baths,

Ormeau-avenue. Plan of buildings, etc., may be inspected at the City Surveyor's Office.

JANUARY 20. — **Carmarthen.** — OVEN, ETC. — The Joint Counties Asylum, Carmarthen, invite tenders for (1) supply and erection of a continuous baking steam oven; (2) the supply of a dough kneading machine. Applications to be made to Mr. E. William Reed, Clerk of the Asylum.

JANUARY 27.—**Hammersmith, London.**—TURBINE GENERATING SET.—Hammersmith B.C. invite tenders for the supply of 1-2,000 k.w. steam turbine generating set, with condenser. Specification and form of tender can be obtained from the Borough Electrical Enginger, Mr. G. Gilbert Bell, Electricity Department, 85, Fulham Palace-road, W., upon payment of 1*l.* 1s.

JANUARY 28.—**Lewes.**—NEW BORING AT WORKHOUSE. —Tenders are invited for a boring at the Workhouse of the Lewes Union, in the Parish of East Chiltington. Specifications, etc., may be obtained on payment of 2*l.* 2s., from Mr. W. Vaux Graham, M.Inst.C.E., 5, Queen Anne's-gate, Westminster, S.W.

FEBRUARY 4. — **Woodfoot, Lockerbie.**—WOODFOOT BRIDGE.—The Lockerbie District Committee of the County of Dumfries invite tenders for taking down the existing timber bridge over the River Annan, at Woodfoot, about two miles from Beattock Station, and for supplying and erecting a new steel girder bridge of three spans. The plans may be seen at the office of the engineers, Messrs. Crouch & Hogg, C.E., 14, Blythswood-square, Glasgow, from whom copies of the specifications, etc., may be obtained on payment of 1*l.* 1s.

FEBRUARY 22.—**Johannesburg.**—STEELWORK, ETC.—The Municipal Council of Johannesburg invite tenders for the supply and delivery of fixtures, fittings, constructional steelwork, etc., for the proposed Municipal Abattoirs, Newtown, Johannesburg. Drawings, etc., may be obtained from Messrs. E. W. Carling & Co., St. Dunstan's-buildings, St. Dunstan's-hill, London, E.C., on deposit of 2*l.* 2s.

APRIL 28.—**Adelaide.**—DREDGER.—Tenders will be received at the office of the Engineer in Chief, Adelaide, South Australia, for the construction and delivery at Port Adelaide, South Australia, of one bucket dredger, one tug, and two hopper barges. Specification can be seen, and forms of tender obtained, at the offices of the Engineer in Chief, Adelaide, and of the Agent-General for the State of South Australia, 28, Bishopsgate-street Within, London.

MISCELLANEOUS.

JANUARY 21. — **Cork.** — WELLWORKS, ETC. — Cork R.D.C. invite tenders for execution of works, according to plans, etc., which may be inspected at the Board-room, Cork Workhouse. Forms of tender may be obtained on application at the Board-room, Cork Workhouse.

JANUARY 22.—**Berkshire.**—DAY WORK.—Berkshire C.C. invite tenders for day work carting of macadam, and other materials for the main roads. Forms of tender, and approximate quantity of materials to be carted, at the County Surveyor's Office, Bank-chambers, Cross-street, Reading, or on receipt of stamped addressed foolscap envelope, form of tender and particulars will be forwarded.

JANUARY 23.—**Swinton and Pendlebury.**—IRON FENCING, ETC.—Swinton and Pendlebury U.D.C. invite tenders for the supply and erection of swings and the supply and erection of wrought-iron fencing at the Moorside Recreation Ground. Plan may be seen, and specification and forms of tenders obtained, on application to Mr. Henry Entwisle, Council Offices, Swinton, Manchester, on deposit of a cheque for 10s. 6d., payable to Mr. W. T. Postlethwaite, Clerk to the Council, Council Offices, Swinton, Manchester.

JANUARY 23.—**Wolverhampton.**—SANITARY PANS.—Tenders are invited for the supply of galvanised sanitary pans and dustbins for the period ending March 31, 1910. Specimens may be seen, and specifications obtained, on application to the Manager of the Team Department, Crown-street.

JANUARY 26.—**Islington.**—TRUCKS.—Tenders are invited for the supply of ten covered hand trucks for street orderlies, and for supplying and fitting to seven existing water-vans distributing apparatus capable of giving a fine, medium, and heavy spray. Conditions and form of tender can be obtained upon application to Mr. J. Patten Barber, at the Town Hall, Upper-street, Islington, N.

JANUARY 26. — **Sowerby Bridge.** — FURNITURE.—Sowerby Bridge U.D.C. invite tenders for new furniture required in the Council Chamber. Plan, etc., may be seen, and form of tender obtained, on application to Mr. George E. Wrigley, Engineer's Office, Sowerby Bridge, on payment of 1*l.*

* JANUARY 27.—**Edmonton.**—TERRAZZO PAVING.—The Guardians of the Edmonton Union invite tenders for certain terrazzo paving and margins at their Infirmary, Upper Edmonton. See advertisement in this issue for further particulars.

* JANUARY 29.—**Chelsea.**—CEILINGS.—The Chelsea B.C. invite tenders for removing plaster from ceilings of men's and women's swimming baths and substituting ⅞-in. yellow deal or pitch pine. See advertisement in this issue for further particulars.

FEBRUARY 6. — **Chelmsford.** — TEAM LABOUR. — Essex C.C. invite tenders for team labour on the main roads for the year ending March 31, 1910. Particulars at the office of the Chief Surveyor, Chelmsford.

PAINTING, etc.

JANUARY 18.—**Southampton.**—PAINTING.—The Corporation invite tenders for executing certain external painting works at the Municipal Offices. Specification, etc., may be inspected, and form of tender obtained, at the Borough Engineer's Office. Every tender must be accompanied by the Borough Treasurer's receipt for a deposit of 5*l.* (Bank of England note).

* JANUARY 20. — **Homerton.** — PAINTING, ETC.—The Guardians of the Hackney Union invite tenders for external painting, etc., to cottages Nos. 35 to 68 (inclusive), Crozier-terrace, High-street, Homerton, N.E. See advertisement in this issue for further particulars.

JANUARY 20. — **Oldham.** — PAINTERS. — Oldham Markets and Baths Committee invite tenders for painting work at Central and Hollinwood Baths. Specifications, etc., can be obtained at the Borough Surveyor's Office.

ROADS, SANITARY, AND WATER WORKS.

JANUARY 18. — **Evesham.** — DRAINAGE. — The Evesham Joint Hospital Board invite tenders for carrying out certain works of drainage in connexion with the Sanatorium. Plans, etc., of the proposed works can be seen at the office of Mr. H. S. Harvey, Borough Surveyor, Town Hall, Evesham.

JANUARY 18. — **Plymouth.**—MAKING-UP.—The Corporation invite tenders for making-up and completing streets and lanes. Plans, etc., may be seen at offices of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth.

JANUARY 18. — **Pontnewydd.** — SEWER.—The Llanfrechfa Upper U.D.C. invite tenders for providing and laying a 9-in. ware sewer in the road leading from Pontrhydyrun to Five Locks, Pontnewydd. Further particulars can be obtained from Mr. George Jones, Surveyor to the Council, Richmond-road, Pontnewydd.

JANUARY 18. — **Rawmarsh.** — GAS MAINS.—Rawmarsh U.D.C. invite tenders for the excavating of trenches to receive about 1,000 yds. of 10-in. gas main, to be laid from the Gasworks, Pargate, to opposite Goosebutt-street, Rawmarsh. Also a separate tender for the laying and properly jointing of about 1,000 yds. of 10-in. gas main. Full particulars may be obtained from Mr. E. O. Watson, Gas Manager, Rawmarsh.

JANUARY 18. — **Spennymoor.** — SEWER WORKS.—Spennymoor U.D.C. invite tenders for (*a*) extension of the main sewer in Durham-road, Spennymoor; (*b*) road-making, etc., required in the widening of Ridley's-buildings, Spennymoor. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. C. R. Spencer, Surveyor to the Council, Silver-street, Spennymoor.

JANUARY 18. — **Wanlip.**—SEWERS.—Barrow-on-Soar R.D.C. invite tenders for the construction of 314 yds. of 9-in. pipe sewer, together with manholes and sewage disposal works in connexion therewith, in the Parish of Wanlip. Plans, etc., may be seen, and specifications, etc., obtained, from Mr. Herbert Herrod, Surveyor, Barrow-on-Soar, Loughborough.

JANUARY 19. — **Newcastle.**—STREETS.—Tenders are invited for the construction of new streets on the Forest Hall Station Estate—about 10,500 super. yds. in all. Plans, etc., may be seen at the office of Mr. A. S. Dinning, 21, Ellison-place, Newcastle-on-Tyne.

JANUARY 19.—**Shoeburyness.**—DRAIN.—Shoeburyness U.D.C. invite tenders for the construction of about 540 yds. of surface-water drain, with manholes and gulley connexions, at Shoeburyness. Plans, etc., may be seen, and schedules of quantities and form of tender obtained, of the Surveyor, Mr. H. A. Harris, Clarence-street, Southend, on payment of a deposit of 1*l.* 1s.

JANUARY 20. — **Colbren.** — WATER SUPPLY.—Ystradgynlais R.D.C. invite tenders for excavating the trenches, supplying, laying, and jointing about 3,713 yds. of 3-in. cast-iron mains, supplying and fixing sluice and air valves, building storage and collecting tanks, and other works, in the Parish of Ystradgynlais Higher. Plans, etc., may be seen, and bills of quantities and forms of tender obtained, from Mr. S. A. Bell, Engineer, Herbert-street, Pontardawe, on payment of 2*l.* 2s. deposit.

JANUARY 20.—**Newbold Verdon, Market Bosworth.**—SEWERS.—Market Bosworth R.D.C. invite tenders for providing and laying about 306 yds. of 9-in., 135 yds. of 8-in., and 201 yds. of 6-in. socket pipe sewers, together with manholes, etc., in the Village of Newbold Verdon. Plans, etc., may be seen at the residence of Mr. Walter Morton Sykes, Surveyor to the Council, 107, Chapel-street, Ibstock, Leicester.

JANUARY 20-23.—**Sowerby Bridge.**—WATERWORKS —Sowerby Bridge U.D.C. Waterworks Committee ... vite tenders for the supply of 20 tons of 6-in. cast-iron spigot and socket water pipes. Tenders are also required for the excavation and resetting (only) of pipe trench for the laying of the above water pipes, at West-street, Sowerby Bridge. Specifications, etc., can be obtained on application to Mr. John Hopkinson, Waterworks Engineer, at his office, Town Buildings, Sowerby Bridge.

JANUARY 21. — **Ashton-in-Makerfield.** — STREET IMPROVEMENTS.—The U.D.C. of Ashton-in-Makerfield invite tenders for the making-up of Windsor-road. Plans, etc., may be inspected, and copy of specification, etc., may be obtained (on deposit of 10s. 6d. with Mr. Albert Sykes, Clerk to the Council, Council Offices, Ashton-in-Makerfield), on application to Mr. Thomas Burgess, F.I.S.E., the Council's Surveyor, Council Offices, Ashton-in-Makerfield.

JANUARY 21.—**Long Benton.**—SEWERS.—The Tynemouth R.D.C. invite tenders for the laying of about 2,000 yds. of 9-in. and 12-in. pipe sewers at Bigges Main, near Long Benton. Plans, etc., may be seen at the office of Mr. A. S. Dinning, 21, Ellison-place, Newcastle.

JANUARY 22. — **Pentre.** — SURFACE-WATER DRAINS.—Rhondda U.D.C. invite tenders for laying about 500 yds. of 18-in. stoneware pipe surface-water drain at Pentre. Plans, etc., may be seen, and forms of tender obtained, at the Public Offices, Pentre, on payment of a deposit of 1*l.* 1s. Mr. W. J. Jones, Engineer and Surveyor, Public Offices, Pentre, Rhondda.

JANUARY 23. — **Aberdare.** — ROAD.—The U.D.C. of Aberdare invite tenders for the completion of a new road to Cwmaman. Plans, etc., may be seen at the Surveyor's Office.

JANUARY 23.—**Leeds.**—STREET WORKS.—Leeds Highways Committee invite tenders for the paving and flagging of Savile-place, back Savile-place, back Mexborough-street, and Savile-avenue. Drawings may be seen at the City Engineer's Office, Municipal Buildings. Forms of tender, etc., may be obtained, and copies of the documents forming the contract inspected, on application at the Highways Office, 155 Kirkstall-road.

JANUARY 23. — **Levenshulme.** — DRAIN.—Levenshulme U.D.C. invite tenders for a length of 12-in. surface-water drain from the culvert in Broom-lane to Thorncliffe-grove. Specifications, etc., may be obtained on application to Mr. James Jepson, Moseley-chambers, 35, Great Underbank, Stockport, Surveyor to the Council.

JANUARY 25.—**Culcabock.**—WATERWORKS EXTENSION. —Inverness-shire C.C. invite tenders for opening and closing tracks and providing, laying, and jointing 5,210 yds. or thereby of cast-iron and other pipes within the extended area of Culcabock Special Water Supply District. Schedules, etc., can be obtained from Mr. John Wedderspoon, Engineer, the Castle, Inverness.

JANUARY 25. — **Hornchurch.**—MAKING-UP.—Romford R.D.C. invite tenders for the making-up of streets, all in the Parish of Hornchurch. Full particulars may be seen, and form of tender obtained, upon application to Mr. W. J. Grant, Surveyor to the Council, Victoria-chambers, Romford.

JANUARY 26. — **Merton.** — CHANNELLING.—Merton U.D.C. invite tenders for the construction of about 600 yds. run of wood block channelling in High-street, Merton. Plan, etc., may be seen, and forms of tender obtained, on application to Mr. G. Jerram, Surveyor, Council Offices, Merton.

JANUARY 27.—**Colwell Common.**—ROAD.—The Isle of Wight R.D.C. invite tenders for the construction of a new road over Colwell Common. Plans, etc., can be seen at the office of the Council's Surveyor, Mr. J. W. Newman, Station-road, Freshwater.

JANUARY 27. — **St. Budeaux.** — STREET WORKS.— Plympton St. Mary R.D.C. invite tenders for the carrying out of works of private street improvements at Crownhill and Honicknowle, in the Parish of St. Budeaux. Plans, etc., may be seen, and forms of tender obtained, on application to the Council's Engineer, Mr. F. A. Clark, 83, Old Town-street, Plymouth, on payment of a deposit of 1*l.* 1s.

JANUARY 28. — **East Barnet.** — MAKING-UP.—East Barnet Valley U.D.C. invite tenders for making-up and sewering Latimer-road (part of), Bosworth-road, and the back roads between Fergusson-road and Middle-road, within the East Barnet Valley Urban District. Plans, etc., may be seen, and form of tender obtained, on application to Mr. Henry York, A.M.Inst.C.E., the Council's Surveyor, at the Council's Offices, Station-road, New Barnet.

JANUARY 28.—**Egg Buckland.**—WATER MAIN.—The Plympton St. Mary R.D.C. invite tenders for laying a 1-in. water main and constructing a tank in connexion with a water supply at Riverford, in the Parish of Egg Buckland. Schedules, etc., may be obtained on application to the Council's Engineer, Mr. F. A. Clark, 83, Old Town-street, Plymouth.

FEBRUARY 1.—**Kempton Park.**—SEWAGE TANKS.— The Metropolitan Water Board invite tenders for the construction of small sewage tanks, partly constructed of reinforced concrete, together with drains, etc., at their Kempton Park Pumping Station, in the Parish of Hanworth. The drawings, etc., may be inspected at the offices of the Chief Engineer, Savoy-court, Strand, W.C. Bills of quantities, etc., from the Chief Engineer, on the production of an official receipt for the sum of 5*l.*, to be deposited with the Accountant at Savoy-court, Strand, W.C.

FEBRUARY 1. — **Yardley.** — IMPROVEMENT OF HIGHWAYS.—Yardley R.D.C. invite tenders for the widening, making-up, kerbing, channelling, and path paving of various roads. Plans, etc., may be seen, and quantities, etc., obtained, on application to Mr. Arthur W. Smith, the Engineer and Surveyor to the Council, at the Council House, Sparkhill, near Birmingham, on payment of a deposit of 3*l.* 3s. to Mr. Francis Ladbury Thompson, Clerk of the Council, Council House, Sparkhill.

FEBRUARY 1.—**Ystradfellte Waterworks.**—NEATH VALLEY, MAIN PIPE CONDUIT.—Neath R.D.C. Waterworks Committee invite tenders for the supply of cast-iron pipes of 18 in., 16 in., and 15 in. diameter respectively. Detail drawings, etc., may be obtained upon application to Mr. D. M. Davies, Engineer, Council Offices, Neath, upon receipt of cheque for 3*l.* 3s.

FEBRUARY 3. — **Barking Town.** — PAVING.—The U.D.C. invite tenders for the execution of kerbing, channelling, flagging, etc., at Ripple-road. Plans may be seen, and specification, etc., obtained, from Mr. C. F. Dawson, Surveyor to the Council, Public Offices, Barking.

STONES, MATERIAL, AND STORES.

JANUARY 18. — **Glasgow.** — FIRECLAY GOODS.—The Corporation invite tenders for the supply of firebricks, fireclay, and fireclay retorts at their gasworks for a period of twelve months. Specifications, etc., may be had on application to Mr. Alex. Wilson, the Engineer, at his office, 45, John-street.

JANUARY 18.—**Perth.**—PIPES.—Dundee T.C. invite tenders for about 68 tons of 2½-in., 3-in., 5-in., and 8-in. cast-iron, spigot, and Faucet pipes. Specifications, etc., at the office of Mr. Jas. Thomson, City Engineer, 91, Commercial-street, Dundee.

JANUARY 18. — **Rawmarsh.** — PIPES.—Rawmarsh U.D.C. invite tenders for the supply of about 1,000 yds. of 10-in. spigot and socket "Mannesmann" steel gas main pipes, delivered free at Midland Railway Station, Parkgate, Rotherham. Full particulars, etc., may be obtained on application to Mr. E. O. Watson, Gas Manager, Rawmarsh.

JANUARY 20. — **Islington.** — ELECTRICAL AND ENGINEERS' STORES.—The B.C. invite tenders for contracts for one year from April 1, 1909. Forms of tender, etc., may be obtained upon application at the Town Hall.

JANUARY 20. — **London.** — WHEELS, ETC.—The East Indian Railway Company invite tenders for the supply and delivery of wheels and axles for wagons and brake vans, as per specification to be seen at the Company's Offices. For each specification a fee of 1*l.* 1s. is charged, which cannot under any circumstances be returned. Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C.

JANUARY 20. — **Woodbridge.** — MATERIALS.—Woodbridge R.D.C. invite tenders for road materials. No form of tender will be supplied. Tenders, accompanied by samples, to be delivered (carriage paid) to Mr. H. E. Kell, Council Offices, Woodbridge. Mr. George Cook, District Surveyor, Grundisburgh, near Woodbridge.

JANUARY 21.—**Nottingham.**—LIGHTING REQUISITES. —The Lighting Committee invite tenders for the

supply of requisites during the year 1909. Further particulars and forms of tender may be obtained from Mr. Carter, Lighting Inspector, St. John's-street.

JANUARY 21.—**Plymouth.**—GOODS.—Plymouth Corporation invite tenders for the supply of goods, materials, and cartage for a period of one year. Particulars and forms of tender can be obtained at office of Mr. Frank Howarth, M.Inst.C.E., Water Engineer, Municipal Buildings, Plymouth.

* JANUARY 21.—**West Ham.**—MATERIALS, STORES, ETC.—The West Ham B.C. invite tenders for supply of various materials, stores, etc. See advertisement in this issue for further particulars.

JANUARY 22.—**Bishop Auckland.**—GOODS, ETC.—The U.D.C. invite tenders for supplying goods and materials and for leading road and other materials. Full particulars, etc., on application to the Surveyor, Town Hall Buildings.

JANUARY 22. — **Rhondda.** — STORES. — Rhondda U.D.C. invite tenders for stores in seven separate contracts, viz. :—(1) bricks; (2) stoneware; (3) stoneware; (4) street brushes, etc.; (5) iron castings, etc.; (6) pavings, etc.; (7) Portland cement and hydraulic lime. Specifications, etc., may be obtained at the office of the Engineer and Surveyor, Council Offices, Pentre, Rhondda. Mr. W. J. Jones, Engineer and Surveyor, Council Offices, Pentre, Rhondda.

JANUARY 22.—**Rotherham.**—PIPES.—The Corporation of Rotherham invite tenders for cast-iron pipes and irregularly-shaped pipes and castings, as may be required during the year ending December 31, 1909. Specifications, etc., may be obtained at the office of Mr. Ernest B. Martin, A.M.Inst.C.E., Waterworks Engineer, Town Hall, Rotherham, on payment of a deposit fee of 1*l.* 1s.

JANUARY 23.—**Hailsham.**—MATERIALS.—Hailsham R.D.C. invite tenders for the supply of road materials and for cartage of same. Three forms of tender have been prepared, as follows :—(*a*) For the supply of materials to be delivered by rail to stations; (*b*) for the supply of materials to be delivered to the sides of the roads; or (*c*) for cartage of materials from the railway stations to the sides of the roads Mr. Edmund Catt, Clerk to the Council, Clerk's Office, 17, London-road, Hailsham.

JANUARY 23.—**Norwich.**—MATERIALS.—Norfolk C.C. invite tenders for the supply of materials, team labour, tools, etc. Specification, etc., may be obtained upon receipt of a stamped addressed foolscap envelope, at office of Mr. T. H. B. Heslop, M.Inst.C.E., County Surveyor, the Shirehouse, Norwich.

JANUARY 24.—**Chipping Norton.**—GRANITE.—The R.D.C. invite tenders for the supply of granite for the year ending March 31, 1910. Specification, etc., may be obtained at office of Mr. R. Entwistle, District Surveyor, Charlbury, Oxon., or on receipt of stamped and addressed envelope.

JANUARY 25.—**Camberwell.**—ANNUAL CONTRACTS.—The B.C. invite tenders for work or for the supply of stores, materials, etc. Forms of tender may be obtained on application to Mr. William Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E., by specifying sections desired.

JANUARY 25.—**Manchester.**—PORTLAND CEMENT.—Manchester Rivers Committee invite tenders for the supply of Portland cement required at their Davyhulme Sewage Works. Forms of tender may be obtained on application to the Secretary of the Rivers Department, Town Hall, Manchester.

JANUARY 25-30.—**Plymouth.**—STORES.—Plymouth Corporation Electricity and Street Lighting Departments invite tenders for the supply of stores. Copies of specifications may be obtained on application to Mr. E. G. Okell, Borough Electrical Engineer, Prince Rock, Plymouth, on a deposit of 10s. for each copy.

JANUARY 26.—**Lambeth.**—GRANITE.—The Guardians of the Poor of the Parish of Lambeth invite tenders for the supply of 200 tons of waste and broken pieces of Jersey or Guernsey granite for breaking. Mr. James L. Goldspink, Clerk, Guardians' Board-room and Offices, Brook-street, Kennington, S.E.

JANUARY 27.—**Hammersmith.**—ANNUAL CONTRACTS.—The B.C. invite tenders for the supply of the stores and materials and the execution of works. Tender forms, etc., may be obtained on application to Mr. H. Thompson, Town Clerk, Town Hall, Hammersmith.

* JANUARY 27.—**Hampstead.**—LAND DRAIN PIPES.—The London C.C. invite tenders for supply and delivery of agricultural drain pipes at Hampstead Heath. See advertisement in this issue for further particulars.

JANUARY 27. — **West Ham.** — GRANITE. — The Guardians invite tenders for the supply of 500 tons of blue Guernsey granite spalls to be delivered free at the Workhouse, Union-road, Leytonstone, N.E. Forms can be obtained at office of Mr. Thomas Smith, Clerk's Office, Board-room, Union-road, Leytonstone, N.E.

* JANUARY 30.—**Chiswick.**—WORKS AND STORES.—The Chiswick U.D.C. invite tenders for execution of work and supply of stores for one, two, or three years. See advertisement in this issue for further particulars.

* JANUARY 30.—**Palmer's Green.**—LAND DRAIN PIPES.—The Southgate U.D.C. invite tenders for supply and delivery of 28,000 4-in. agricultural land drain pipes. See advertisement in this issue for further particulars.

FEBRUARY 1. — **Bermondsey.** — CONTRACTS.—Bermondsey B.C. invite tenders for the supply of articles for one year from March 31, 1909. Forms of tender and other particulars can be obtained on application to Mr. Fredk. Ryall, Town Clerk, Town Hall, Spa-road, S.E.

FEBRUARY 1. — **Bermondsey.** — SUPPLIES. — The Guardians invite tenders for articles for the period of one year. Printed forms of tenders may be obtained on written application to Mr. E. Pitts Fenton, Clerk to the Guardians, 283, Tooley-street, S.E.

FEBRUARY 1.—**Derby.**—ROAD MATERIAL.—Derbyshire C.C. invite tenders for the supply of broken granite, basalt, limestone, slag, or other suitable materials required for the main roads. Form of tender and conditions of contract may be obtained at office of Mr. J. W. Horton, A.M.Inst.C.E., County Surveyor, County Offices, St. Mary's-gate, Derby.

FEBRUARY 2.—**Hatfield.**—GRANITE AND SLAG.—Hertfordshire C.C. invite tenders for the supply of broken granite and slag required for the main roads. Forms of tender, etc., may be obtained on application at office of Mr. Urban A. Smith, M.Inst.C.E., County Surveyor, County Surveyor's Office, Hatfield.

FEBRUARY 2.—**Hertfordshire.**—MATERIALS.—Hertfordshire C.C. invite tenders for supply of local materials, team labour, etc. Further particulars and forms of tender can be obtained at office of Mr. Urban A. Smith, County Surveyor, County Surveyor's Office, Hatfield.

FEBRUARY 6.—**Blackburn.**—MATERIALS, ETC.—The Corporation invite tenders for the supply of materials, tools, labour, etc., for a period of twelve months. Specifications, etc., may be had on application at offices of Mr. William Stubbs, A.M.Inst.C.E., Borough and Water Engineer, Municipal Offices, Blackburn.

FEBRUARY 6.—**Chelmsford.**—GRANITE, ETC.—Essex C.C. Highways, Bridges, and Buildings Committee invite tenders for the year ending March 31, 1910, for the supply of Norway granite kerb and setts. Forms of tender, etc., can be obtained at the Chief Surveyor's office at Chelmsford.

FEBRUARY 17. — **Gloucester.** — MATERIALS. — Gloucestershire C.C. invite tenders for the supply of stone for the use on main roads for the year. Forms of tender can be obtained from the County Surveyor, Mr. E. S. Sinnott, M.Inst.C.E., Shire Hall, Gloucester.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDER AND CONTRACTOR'S STK. AND PLANT, HACKNEY DOWNS—230, Dalston-lane	H. W. Smith	Jan. 19
*FREEHOLD PROPERTY, WESTERHAM—On the Premises	Seale, Swan, & Seale	Jan. 20
*NURSERY STOCK, SOUTH WOODFORD—On the Premises	Protheroe & Morris	Jan. 27
*FREEHOLD SITES, HAMPSTEAD—At the Mart	Furbers	Feb. 17

Patents of the Week.

APPLICATIONS PUBLISHED.*

16,029A of 1907.—Harry Bentley: Trough conveyors and jigging screens.

21,638 of 1907.—Peter Martin: Treatment of iron or steel to prevent rust or corrosion.

25,670 of 1907.—Edmund Bachelor Ivatts: Metal, wooden, and other cocks, taps, and siphons.

27,316 of 1907.—Percy Gordon Eckersley Daniel and Arthur Thomas Foot: Hot-water system for household and similar purposes.

27,418 of 1907.—Charles Victor Hugo Jenner: Sash or sliding windows.

27,800 of 1907.—Robert MacLaurin: Domestic fireplace.

28,477 of 1907.—Arthur Henry Barker: Means for heating and cooling the rooms, halls, and other parts of buildings.

206 of 1908.—Rudolf Bartholomaüs: Cutting mechanism for tubes and rods.

734 of 1908.—George Ivor Huxtable: Buffer devices for doors.

1,245 of 1908.—The Coalbrookdale Company, Ltd., and William Stewart Malcolm: Kitchen and cooking ranges.

2,118 of 1908.—Herbert Kempton Dyson: Bar for reinforcing concrete.

2,431 of 1908. — Ludwig Schlentheim, Frederick Dan Huntingdon, and Diespeker, Ltd.: Building block.

2,853 of 1908.—Harry Mills: Machines for tapping nuts.

3,518 of 1908.—James Knutton, Edwin Frederick Goodall, and William George Moore: Adjusting spanners and wrenches.

4,184 of 1908.—Thomas Towler: Window sash fasteners.

5,139 of 1908.—James Edwin York: Method and apparatus for solidifying ingots.

5,446 of 1908.—John Eckford: Apparatus for automatically checking the fall of a movable jib or derrick.

7,784 of 1908.—F. Reddaway & Co., Ltd., and William Hepburn: Conveyor belts and driving belts.

7,863 of 1908.—William Newman & Sons, Ltd., and George Frederick Newman: Door and gate springs.

9,765 of 1908.—William McNutt Meek and Imogen Maude Lamberton: Wrench.

12,517 of 1908.—Erik Liebreich: Manufacture of oil paints, and process of applying same to metal for preventing rusting.

13,812 of 1908.—Charles Dean: Locks and latches.

16,123 of 1908.—Andrew Archilaus Rea and George Herbert Rea: Sliding doors.

17,119 of 1908.—Samuel Lewis Solomon and David Austin: Compound for rendering waterproof cements and mortars.

17,668 of 1908.—Robert Rae Renwick: Door hangers and tracks.

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT.

December 18.—By HARRY BALL (at Bedford).
Bedford,—104 and 106, Hartington-st, f. £475
38, Ombersley-rd., f. 250

December 21.—By WINTERTON & SONS (at Yoxall).
Yoxall, Staffs.—The Forest Farm, 103 a. 3 r. 11 p., f. 3,420
Accommodation land, 5 a. 1 r. 28 p., f. 347

January 6.—By WYATT & SON (at Chichester).
Chichester.—49, Tower-st., and 1 to 5, Rose-ct., f. 350
Oving-rd., freehold land and stable 170

January 7.—By H. E. FOSTER & CRANFIELD.
Henrite Explosives, Ltd.—The leases, plant, machinery, stock, and goodwill 700

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.		
Best Stocks	1	6	0	per 1000	alongside, in river.
Picked Stocks for Facings	2	10	0	,,	delivered
Flettons.....	1	4	0	,,	at railway depôt.
Best Fareham Red	3	12	0	,,	,, ,,
Best Red Pressed Ruabon Facing..	5	0	0	,,	,, ,,
Best Blue Pressed Staffordshire ...	3	15	0	,,	,, ,,
Do. Bullnose	4	0	0	,,	,, ,,
Best Stourbridge Fire Bricks	3	14	0	,,	,, ,,
GLAZED BRICKS.					
Best White and Ivory Glazed Stretchers.....	10	7	6	,,	,, ,,
Headers	9	17	6	,,	,, ,,
Quoins, Bullnose, and Flats	13	17	6	,,	,, ,,
Double Stretchers	15	17	6	,,	,, ,,
Double Headers...	12	17	6	,,	,, ,,
One Side and two Ends	16	17	6	,,	,, ,,
Two Sides and one End.....	17	17	6	,,	,, ,,
Splays, Chamferred, Squints..	15	10	0	,,	,, ,,
Best Dipped Salt Glazed Stretchers	10	7	6	,,	,, ,,
Headers.....	9	17	6	,,	,, ,,
Quoins, Bullnose, and Flats	13	17	6	,,	,, ,,
Double Stretchers	15	17	6	,,	,, ,,
Double Headers...	12	17	6	,,	,, ,,
One Side and two Ends	16	17	6	,,	,, ,,
Two Sides and one End.....	17	17	6	,,	,, ,,
Splays, Chamferred, Squints..	15	10	0	,,	,, ,,
Second Quality White and Dipped Salt Glazed	1	5	0	,,	less than best.

BRICKS, &c. (*continued*).

	s.	d.	
Thames and Pit Sand	6	6	per yard, delivered.
Thames Ballast	5	0	" "
Best Portland Cement	28	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	" "
PORTLAND STONE (20 ft average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	" "

	s.	d.	
Ancester in blocks	1	10	per ft. cube, deld. rly. depôt.
Beer "	1	6	" "
Greenshill "	1	10	" "
Darley Dale in blocks	2	4	" "
Red Corsehill "	2	2	" "
Closeburn Ree Freestone	2	0	" "
Red Mansfield "	2	4	" "

YORK STONE—*R bin Hood Quality.*

	s.	d.	
Scappled random blocks	2	10	per ft. cube, deld. rly. dep.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2	6	" "
3 in. sawn two sides slabs (random sizes)	0	11½	per ft. cube. "
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	" "
1½ in. to 2 in. ditto, ditto	0	6	" "
HARD YORK— Scappled random blocks	3	0	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super. "
6 in. rubbed two sides ditto	3	0	" "
3 in. sawn two sides slabs (random sizes)	1	2	" "
2 in. self-faced random flags	0	5	" "

SLATES.

In. In.	£	s.	d.	
20×10 best blue Bangor	13	2	6	per 1000 of 1200 at r.d.
20×12 " "	13	17	6	" "
20×10 first quality "	13	0	0	" "
20×12 " "	13	15	0	" "
16×8 " "	7	5	0	" "
22×10 best blue Portmadoc	12	12	6	" "
16×8 " "	6	12	6	" "
20×10 best Eureka unfading green	15	17	6	" "
20×12 " "	18	7	6	" "
18×10 " "	13	5	0	" "
16×8 " "	10	5	0	" "
20×10 permanent green	11	12	6	" "
18×10 " "	9	12	6	" "
16×8 " "	6	12	6	" "

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000, at rly depôt.
Hip and Valley tiles	3	7	per doz. "
Best Broseley tiles	50	0	per 1000 "
Do. Ornamental tiles	52	6	" "
Hip and Valley tiles	4	0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 "
Do. Ornamental do.	60	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000 "
Do. Ornamental do.	54	6	" "
Hip tiles	4	1	per doz. "
Valley tiles	3	8	" "
Best "Rosemary" brand plain tiles	48	0	per 1000 "
Best Ornamental tiles	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	8	" "
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000 "
Do. pressed	47	6	" "
Do. Ornamental do.	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "
Staffordshire (Hanley) Reds or Brindled tiles	42	6	per 1000 "
Hand-made sand-faced	45	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "

WOOD.

BUILDING WOOD.	At per standard.					
	£	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13	10	0	15	0	0
Deals: best 3 by 9	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	"		
2 in. by 4 in. and 2 in. by 6in.	9	0	0	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in by 7 in.	0	10	0	more than battens		
¾ in.	1	0	0	"		

WOOD (*continued*).

BUILDING WOOD—(*continued*)—	At per load of 50 ft.					
	£	s.	d.	£	s.	d.
Fir timber: best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	0	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	10	0	3	0	0
Pitch-pine timber (30 ft. average)	4	0	0	4	15	0

JOINERS' WOOD.	At per standard.					
	£	s.	d.	£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	25	0	0
3 in. by 9 in.	22	0	0	23	0	0
Batten 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Second yellow deals, 3 in. by 1 in.	18	10	0	20	0	0
" " 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	12	0	0
Petersburg first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0
Petersburg second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	14	0	0
Do. 3 in. by 9 in.	12	10	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14	10	0	15	10	0
" " 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
" " 3 in. by 9 in.	12	10	0	13	10	0
Battens	10	0	0	11	0	0
Pitch-pine: deals	18	0	0	21	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	"		
Seconds, regular sizes	33	0	0	"		
Oddments	28	0	0	"		
Kauri Pine—Planks, per ft. cube	0	3	6	0	5	0
Danzig and Stettin Oak logs— Large, per ft. cube	0	3	0	0	3	9
Small "	0	2	6	0	2	6
Wainscot Oak Logs, per ft. cube	0	5	6	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8½	0	0	9½
¼ in. do. do	0	0	7	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	0	1	0
Selected, Figury, per ft. super. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. super, as inch	0	0	10	0	1	0
Teak per load	17	0	0	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	0
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. " "	0	14	0	0	18	0
¾ in. by 7 in. white " "	0	10	0	0	11	6
1 in. by 7 in. " "	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton.					
	£	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	7	0	0	7	10	0
Compound Girders, ordinary sections	9	0	0	10	0	0
Steel Compound Stanchions	11	0	0	12	0	0
Angles, Tees, and Channels, ordinary sections	9	0	0	10	0	0
Flitch Plates	9	0	0	9	10	0
Cast Iron Columns and Stanchions including ordinary patterns	7	10	0	8	10	0

METALS.

	Per ton, in London.					
IRON—	£	s.	d.	£	s.	d.
Common Bars	8	10	0	9	0	0
Staffordshire Crown Bars, good merchant quality	8	15	0	9	5	0
Staffordshire "Marked Bars"	10	10	0	—		
Mild Steel Bars	8	15	0	9	5	0
Hoop Iron, basis price	9	5	0	9	10	0
" " Galvanised	17	0	0	—		
(*And upwards, according to size and gauge.)						
Sheet Iron Black— Ordinary sizes to 20 g.	9	15	0	—		
" " 24 g.	10	15	0	—		
" " 26 g.	12	5	0	—		
Sheet Iron, Galvanized, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15	0	0	—		
Ordinary sizes to 22 g. and 24 g.	15	10	0	—		
" " 26 g.	17	10	0	—		
Sheet Iron, Galvanized, flat, best quality— Ordinary sizes to 20 g.	18	0	0	—		
" " 22 g. and 24 g.	18	10	0	—		
" " 26 g.	20	0	0	—		
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	14	10	0	—		
" " 22 g. and 24 g.	14	15	0	—		
" " 26 g.	16	5	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12	0	0	—		
Best Soft Steel Sheets, 22 g. & 24 g.	13	0	0	—		
" " " 26 g.	15	0	0	—		
Cut Nails, 3 in. to 6 in.	10	10	0	11	0	0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London.					
	£	s.	d.	£	s.	d.
LEAD—Sheet, English, 3lb. and up.	16	15	0	...	—	
Pipe in coils	17	5	0	...	—	
Soil pipe	19	5	0	...	—	
Compo pipe	20	5	0	...	—	
ZINC—Sheet— Vielle Montagne ton	26	10	0	...	—	
Silesian	26	5	0	...	—	
COPPER— Strong sheet per lb.	0	1	0	...	—	
Thin " "	0	1	1	...	—	
Copper nails "	0	0	10	...	—	
Copper wire "	0	0	10	...	—	
BRASS— Strong Sheet "	0	0	11	...	—	
Thin "	0	1	0	...	—	
TIN—English Ingots "	0	1	5	...	—	
SOLDER—Plumbers "	0	0	7	...	—	
Tinmans "	0	0	9½	...	—	
Blowpipe "	0	1	0	...	—	

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1½d. " "
21 oz. thirds	3d. " "
" fourths	2½d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4½d " "
" fourths	4½d. " "
Fluted Sheet, 15 oz	3½d. " "
" 21 oz.	4½d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d. per ft. delivered.
3/16 "	2¾d. " "
¼ "	2¾d. " "
Figured, Oxford Rolled and "Oceanic" Glass, white	3½d. " "
" " tinted	5d. " "
OTHER GLASS— "Arctic" Glass, white	3½d. " "
" " tinted	5d. " "
" " Ruby and opalescents	1s. " "

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	11
" " " in barrels	"	0	2	0
" " " in drums	"	0	2	3
Boiled " " in barrels	"	0	2	3
" " " in drums	"	0	2	6
Turpentine in Barrels	"	0	2	7
" in drums	"	0	2	9
Genuine Ground English White Lead	per ton	21	0	0
Red Lead, Dry	"	20	0	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon.		
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Mapel	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcement of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l*., unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERYSTWYTH. — For additional classrooms, manual training room, cookery centre, etc., at Alexandra-road Council School, for Cardigan County Education Committee. Mr. G. Dickens-Lewis, County Architect, North Parade, Aberystwyth:—

J. Hayes	£7,890 0 0
Treasure & Son, Ltd.	7,523 0 0
W. H. Thomas	7,176 0 0
J. Dallow & Sons	6,950 0 0
Edwards Bros	6,498 0 0
Humphreys & Williams	6,311 19 2
Owen Bros.	5,997 0 0
Jones & Lewis	5,495 0 0
E. E. Jenkins, Aberystwyth*	5,488 0 0

BRENTWOOD.—For the conversion of the swimming-bath at the schools into a separate infants' school, for the Hackney Guardians. Mr. W. A. Finch, architect 76, Finsbury-pavement, E.C.:—

		Weeks.
F. G. Lawrence	£700 0 0	12
A. E. Hubbard	599 0 0	10
W. Houghton, 7, Finsbury-square, E.C.*	595 0 0	10
Dowling & Davis	440 0 0	8
F. W. Jarvis	399 0 0	6

BROWNHILLS (Staffs).—For erecting stables and conversion of old buildings into cartsheds, etc., at Norton Canes, for the Urban District Council. Mr. J. H. Shaw, Surveyor, Public Offices, Brownhills:—

R. Harris	£158 0	Oakley & Wigley	£142 12
J. & F. Wootton	155 0	J. Derry, Brownhills*	125 10
W. T. Goodall	149 10		

BUSHEY GROVE.—For laying 540 yds. of 9-in. stoneware-pipe sewer, etc., for Bushey Urban District Council. Mr. E. R. Ryder, Surveyor, Council Offices, Bushey:—

G. R. Mann	£376 9 8	F. P. Bliss	£277 13 6
Langley & Johnson	350 0 0	W. Bailey & Sons	275 0 0
T. Fowler	340 0 0	Champniss & Co.	268 0 0
E. H. Bate & Co.	308 14 0	W. & W. Wilkins	259 0 0
Clark Bros.	295 10 0	G. Jaggard	250 5 11
H. Brown	289 1 11	Bracey & Clark, Watford*	246 5 0
G. Pitkin	285 13 3		

EXETER.—For new mineral water factory and stabling in Belgrave-road, for Mr. W. H Grafton. Mr. R. M. Challice, architect and surveyor, 14, Bedford-circus, Exeter:—

Oliver & Son	£937 0 0
W. Brealy	902 0 0
T. Sleeman	899 7 0
G. Herbert	899 0 0
J. & J. M. Soper	890 0 0
J. Triggs	879 0 0
Ham & Passmore	871 0 0
G. Letter	870 0 0
W. J. Coles	859 4 0
L. Smale	835 0 0
Westcott Austin & White	824 11 10
Baker Bros., Cowick-lane, St. Thomas*	787 0 0

FENTON.—For new infants' school, Manor-street, Fenton, for the Fenton Education Committee. Mr. S. B. Ashworth, architect, Old Bank Offices, Stoke-upon-Trent;—

J. Walters, jun.	£3,840 0	S. Wilton, jun.	£3,499 0
J. Grant	3,757 0	P. H. Bennion	3,459 5
Young & Son	3,655 0	Bennett Bros.	3,440 0
T. R. Yoxall	3,620 0	A. E. Chatfield	3,420 0
W. Mould	3,571 0	Ball & Robinson	3,400 0
Tomkinson & Betteley	3,557 0	H. Goodwin	3,390 0
F. Godwin	3,541 0	C. Cornes & Son, Hanley*	3,195 0

HULL.—For concrete paving to playgrounds, alterations to latrines, etc., at the Grammar School, Leicester-street, for the Grammar School Committee. Mr. J. H. Hirst, City Architect, Town Hall, Hull. Quantities by Architect:—

O. Lister	£1,565 13	P. T. Kettlewell	£974 0
F. Bilton	1,133 0	A. Walker & Son, Ltd.	969 0
J. T. Levitt	1,060 0	M. Harper, Brunswick-avenue*	947 0
G. Jackson & Sons	1,049 0		

HULL.—For erecting a heating vault, etc., at South Myton Council School, Adelaide-street, for the Corporation:—

P. J. Kettlewell	£205 0 0	G. Jackson & Son	£172 10 0
Lison & Son	175 13 4	F. Southern*	156 2 6
F. Bilton	174 6 8		

HULL.—Accepted for colouring, whitewashing, etc., of schools, for the Education Committee:—

Williamson-street Junior.

Codner & Son, Hull £17 10 0

Beverley-road Cookery, Buckingham-street Cookery, Mersey-street Cookery and Laundry.

C. S. Drury & Sons, Hull £15 0 0

Constable-street Cookery, Thomas Stratten Cookery, Thoresby-street Cookery and Laundry, Westbourne-street Cookery.

Codner & Son, Hull £14 10 0

Park-avenue.

Codner & Son, Hull £37 10 0

St. James's.

Stephenson & Christopher £21 10 0

Fountain-road.

Hull City Engineer (estimated) £32 15 0

LONDON.—For carrying out alterations and additions to the meeting hall of the West End Baptist Chapel, King-street, Hammersmith, W. Messrs. Gordon Wilson & Co., architects, 667, Fulham-road, S.W.:—

J. Myring & Co.	£1,475 0 0
C. Gray	1,280 18 2
S. Beaven	1,189 0 0
H. T. Bishop	1,168 0 0
G. H. Bailey	1,098 0 0
Dorey & Co.	1,079 0 0
A. J. Hicks	1,077 10 2
T. W. Acock	1,060 7 11
W. Lowe*	1,015 0 0

LONDON.—For the erection of a police-station at Highbury-vale. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 8, Adelphi-terrace, Strand, W.C.:—

Dove Bros., Ltd.	£13,587	McCormick & Son	£11,987
C. Ansell	13,500	Lovatt, Ltd.	11,967
Treasure & Son, Ltd.	13,351	F. & H. F. Higgs	11,927
Cubitt & Co.	12,950	Patman & Fotheringham	11,923
Shurmur & Son, Ltd.	12,650	Prestige & Co., Ltd.	11,900
Higgs & Hill, Ltd.	12,430	Godson & Sons	11,725
Willmott & Sons	12,381	Sabey & Son, Ltd.	11,690
Leslie & Co., Ltd.	12,223		
Mowlem & Co., Ltd.	11,990		

NEWBURY.—For girls' school new buildings, for Berkshire Education Committee:—

Bosher & Sons	£10,558 12 4
Silver & Sons	9,994 0 0
Collier & Catley	9,699 0 0
Hoskings Bros.	9,400 0 0
A. J. Chivers	9,350 0 0
W. Creed	9,324 0 0
E. C. Hughes	9,095 0 0
H. Elms	9,009 0 0
G. Elms	8,989 15 6
C. W. Cox & Sons	8,988 0 0
Houghton & Hitchman	8,974 0 0
J. B. Seward, Wokingham*	8,928 0 0

SHINFIELD.—For erecting new buildings, for Berkshire Education Committee:—

		Extra for Tiled Dado.
Spear & King	£4,076 0 0	£128 0 0
Bosher & Sons	4,073 3 6	167 17 10
J. B. Seward	4,031 0 0	116 0 0
Hunt & Son	3,961 0 0	96 19 0
H. Flint	3,943 0 0	113 0 0
McC. E. Fitt	3,923 0 0	114 0 0
R. Love	3,858 0 0	125 0 0
Cæsar Bros.	3,844 16 0	137 0 0
H. W. Godwin	3,839 3 7	103 0 0
E. C. Hughes	3,829 0 0	142 4 7
G. S. Lewis Bros.	3,804 0 0	115 0 0
C. Aldridge, Spencer's Wood*	3,477 12 8	94 5 4

WORSBROUGH BRIDGE (Yorks).—For constructing a sewer from Worsbrough Bridge to Ward Green, for the Urban District Council. Mr. J. Whitaker, Surveyor to the Council:—

Porter & Sons	£451 11 6	M. Rucklege, Barnsley*	£350 12 0
Baines & Briggs	405 0 6	W. Guest	337 12 0
F. Brown	369 0 0		

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REVIEWS OF BOOKS:

Monthly Supplement to "The Builder."

Books.

The Art of the Plasterer: An Account of the Decorative Development of the Craft chiefly in England from the XVIth to the XVIIIth Century; with Chapters on the Stucco of the Classic Period and of the Italian Renaissance; also on Sgraffito, Pargeting, Scottish, Irish, and Modern Plasterwork. By GEORGE B. BANKART, Architect and Craftsman. (London: Batsford. 1908. 25s. net.)

OF all materials employed by the builder plaster is the most intimate and familiar; a man shall build his house of stone or brick, but for convenience and beauty he must line his walls with plaster that so, stern and rugged as they may be on the outer side to withstand the winds of heaven, they may show a smooth face to the family hearth which they are destined to protect. Few materials respond so easily to the hand of the craftsman, and, owing to this very facility, few have been put to baser uses. Honestly acknowledged and treated as a coating, it is susceptible of great beauty, but when compelled to simulate the upholding of loads, as in modillions, consoles, and the like supporting members of cornices, and to take on, to all appearance, the functions and semblance of stone, it is a deception and a lie; or as we of the present day would prefer to phrase it, an error in taste. Not to enlarge on the "immorality" of such a use of plaster at a time when it is generally allowed that truth is not a necessary concomitant of beauty, we would content ourselves with saying that when thus employed it must be judged by other canons than those of the art of plastering, and excused as a sample of what might have been done in stone had the money sufficed.

We are borne out in these observations by Mr. George Bankart, in whom the art has found an able historian. "The Art of the Plasterer" is an able and straightforward survey of the principles and practice of plastering from ancient times down to the present day which should find a place on every architect's bookshelf, accompanied as it is by illustrations of examples of all periods, pregnant with suggestion and inspiration for the modern designer. The chapter on the Stucco-Duro of the ancients reminds us vividly how deeply the brothers Adam were indebted to them for the manner which they popularised in this country. The photographs of the plaster vaults of tombs in the Via Latina at Rome would easily pass muster as specimens of the "Adams" style.

During the Middle Ages the art fell into disuse; the discovery of the Bath of Titus, by Cardinal Giovanni de Medici, revealed many fine examples of the then lost craft of stucco-work. Raphael's assistant, Giovanni da Udine, set to work to produce a material of a similar nature to the old composition; his master entrusted him with the decoration of the loggie of the Vatican, and in them we see the earliest examples of the revived use of Stucco-Duro. From Italy the art passed into France; Primaticcio of Bologna was invited by Francis I. to superintend the works at Fontainebleau, and there he introduced the new method of decoration. All this is admirably recorded by Mr. Bankart in his chapter on the "Stucco-Duro" of the Renaissance, and fully illustrated. A chapter on Sgraffito-work traces its development down to the present time, concluding with some excellent examples of the work of Mr. Heywood Sumner. We would draw particular attention to the author's method of ventilating the plaster lining of damp walls, well shown by the sketch on page 40. The first example of the work of the stuccoist in England was the palace of "Nonesuch," the work of Italian, French, and Dutch artists; the whole building, to judge from contemporary accounts and drawings, was covered with stucco reliefs, occupying the panels between the timber framing. The first native English stuccoist was Charles Williams, who had probably worked in Italy and at Fontainebleau. To him is due the plaster-work at Longleat and the old Hall at Hardwick. The expense of the Italian Stucco-Duro led to the introduction in the latter half of the XVIth century of the coarser lime, sand, and hair composition now ordinarily employed in common use. Every phase of the history of the art is admirably described and illustrated by photographs and drawings. Chapter X., on "English Plaster-work of the Later Renaissance," is a mine of information. Special chapters are devoted to Scottish and Irish plaster-work. In the latter chapter we noticed a misprint which has escaped observation. Fig. 338 should be described as "La Touche's Bank," not "La Tanche's Bank." In an earlier chapter, the expression "a wall, dated 103 B.C." is perhaps a little unhappy, suggesting, as it does, a startling instance of prophecy.

We are in full agreement with Mr. Bankart's remarks on the right treatment of plaster ornament, and we trust that they will be taken to heart by the craftsman of to-day.

In conclusion, we would congratulate the author on the production of what should prove the standard work on the subject.

Greek Buildings Represented by Fragments in the British Museum. By W. R. LETHABY. IV. The Theseum, Erectheum, and other works. (Batsford, 1908. 3s. net.)*

IN the fourth and concluding part of his series, Professor Lethaby deals with the Theseum, the Propylæa, the Nihé Temple, the Ilissus Temple, the Erectheum, the Temple at Bassae, the large Temple at Rhamnus, the Nereid Monument, the Lion Tomb at Cnydos, various works at Priene, Miletus, Salamis, and Naucratis, the Choragic Monument of Lysicrates, the Lycian Tombs, and the Treasury of Atreus at Mycenæ, all represented in the Museum by some fragments and casts, though in some cases the fragments are meagre.

It will thus be seen that this part of the series has of necessity a different scope from the preceding ones. The most lengthy description is given to the Erectheum, of which we have several important fragments, notably an entire column from the east portico and a caryatid; in fact, in the author's words, we have "almost all the characteristic details."

He seems to suggest that the capital on the top of the columns is too high up for study; it might be as well to make a careful cast of it to be placed at eye level for comparison, but we think the actual capital is best as it is; the beauty of the entire column, along with its capital, in the marble, is one of the precious things of the Museum. There is a reference to the bronze "palm-tree" of the interior, which may be mentioned along with the snake column at Delphi as one of the most interesting pieces of Greek furniture we have record of. Professor Lethaby inclines to the unsymmetrical theory of the plan, which indeed seems to be that of the latest cool criticisms of Dörpfeld's plea for an intended symmetrical plan; but the matter is not yet quite clear.

We have not space to more than briefly refer to some of the other contents. Perhaps more might have been said about the Nereid Monument, and an illustration of its plan is lacking. It is certainly the most interesting absolutely authentic record of a certain type of Greek building.

The fine fragments from Miletus and Priene are justly remarked. These, with the Mausoleum and Ephesus fragments, secure the Museum's possession of the finest collection of Asiatic Ionian pieces to be seen anywhere.

The fragment of a capital from Naucratis, illustrated on page 192, is of great interest as linking up the Greek and Roman types of volute end.

The booklet is full of information of a most useful kind; in fact, there is more to be gained from it about Greek building in general than from the others, as might be expected. On the other hand, it is impossible to avoid a certain scrappiness of treatment, though a solid read through the pages goes as far to dissipate such a feeling as anyone could possibly expect.

* For review of preceding parts, see leading article in *Builder* of September 12, 1908.

Strength of Materials. By ARTHUR MORLEY, M.Sc., M.I.Mech.E., Professor of Mechanical Engineering in University College, Nottingham. (London: Longmans, Green, & Co. 1908.)

SO MANY works are already in existence on the strength of materials that there appears to be no pressing necessity for the new treatise by Professor Morley. But while stereotyped lines have necessarily been followed to a considerable extent, we are glad to notice that various original methods of treatment have been introduced. For example, in Chapter II. the author expounds the different theories of elastic strength, and elsewhere draws attention to the formulæ based on those theories in cases where compound stresses are developed. Again, in Chapter VI., the author makes use of a simple method of determining the deflection of beams by the moment of the area of the bending moment diagram—a method which in Chapter VII. is shown to be particularly suitable for the solution of problems concerning beams with fixed ends and continuous beams. Among other subjects discussed more fully than usual are the strength of rotating discs and cylinders, the bending of curved bars in the form of hooks and rings, and the strength of flat plates. Testing machines and methods are wisely relegated to the end of the book, where they do not interfere with the connected train of exposition, as happens in more than one standard treatise; and finally the author includes many fully-worked numerical examples which will be generally appreciated by readers and students. The volume is one which we have much pleasure in recommending.

The Drainage of Town and Country Houses. A practical account of modern sanitary arrangements and fittings. By G. A. T. MIDDLETON, A.R.I.B.A., etc. New and enlarged Edition. (London: B. T. Batsford. 1908.)

IN many respects this is an excellent book for architectural students. It is well arranged, concisely written, and very clearly

and fully illustrated. The author has taken pains to include good examples of the different kinds of modern sanitary fittings and to describe and illustrate the methods of fitting them up. Many small alterations have been made in this edition, but the author in his preface draws particular attention to the new folding plate showing the drains of a quadrangular block of stable-buildings, and to the new matter in the chapter on sewage-disposal. The long branch-drains and junctions shown in the former are not to be commended, and might have been avoided without increasing the total length of the drains. In the chapter on sewage-disposal the author appears to have given expression to opinions of the patentees or manufacturers whose apparatus he describes, and as a result conflicting statements are made. On page 117 it is said that sewage should take "from eight to twenty-four hours to traverse" a septic tank, but on page 121 we are told that the tank "should have a two days' storage capacity, based on an average of thirty gallons per head per diem for the largest number of persons living in the house." A septic tank calculated on the latter basis would probably yield a foul-smelling effluent; storage for one day's flow is usually ample. The author describes both percolating filters and contact-beds, and lends the weight of his name to the statement that in the former "the filtration is little more than mechanical, while," in the latter, "a fresh and most valuable bacterial action takes place." On the somewhat difficult question of the capacity of a cesspool, the author suggests that it should hold, "on a liberal estimate, three months' flow." Adopting his estimate of thirty gallons per head daily, we find that the sewage from a small house with six occupants would in three months amount to more than 2,600 cubic ft.; a cesspool of this capacity would be a costly undertaking, particularly in "water-logged soil," where, we are told, the adoption of a cesspool "is still the only thing to be done." Certainly the allowance of thirty gallons per head daily is a liberal estimate, and as a rule storage capacity for one month, calculated on the basis of a daily flow of twenty gallons per head, is all that can be afforded, and possibly more than is necessary. A "model" drainage-specification is given in Chapter XIV., and this is followed by chapters on by-laws and drainage surveys and reports. Four examination-papers on drainage follow in an appendix, and a full index completes a very useful book.

By-laws as to House-Drainage and Sanitary Fittings. Made by the London County Council. Annotated by GERARD J. G. JENSEN, C.E., and another. Second Edition. (London: The Sanitary Publishing Company. 1908.)

THIS book contains all the by-laws now in force in the County of London relating to house-drainage, sanitary fittings, the removal of refuse, etc. Explanatory notes are added by the authors, and illustrations are given of drainage-systems, manholes, traps, water-closets, and other details. Although frequent references are made to the by-laws in force in some of the large provincial towns, the book is designed principally for the use of architects and builders in London, and to them it will certainly prove a handy and useful guide. A map of the administrative County of London, showing the metropolitan boroughs, is inserted as a folding plate, but is too small to be of much service.

The Ventilation of Public Sewers. By JOHN S. BRODIE, M.Inst.C.E., F.R.S.I. etc. (London: The St. Bride's Press. 1908.)

THE ventilation of public sewers has proved to be such a difficult problem that many borough surveyors and city engineers have, in recent years, advocated the abolition of intercepting traps on private drains, so that ventilation of the sewers might be effected by means of the private drains and soil-pipes. We have repeatedly protested against this solution of the problem, and are glad to find that Mr. Brodie also favours the retention of the intercepting trap. The first and most important object to be attained in ventilating a sewer is, he says, "To ensure that the *individual* dwelling is, so far as is possible, aerially cut off from the sewer which is common to *several* dwellings." The second object is "to make it discharge its functions . . . without danger or offence to the general public. Surely," he adds, "this is not beyond the resources of modern engineering, without attacking the intercepting trap?" The text of the book is divided into seven chapters, dealing with the history of sewer ventilation, the necessity for it, ventilation by natural and artificially-produced air-currents, deodorisation of sewer air, comparative cost of different methods, and general conclusions. All the principal systems now in use are briefly described. A very valuable appendix, which occupies more than one-half of the book, contains abstracts of reports, papers, and discussions on the subject of sewer ventilation, beginning with Sir Robert Rawlinson's suggestions in 1878, and continued up to the year of publication. It is a book which ought to be in the hands of all surveyors and engineers in charge of public sewers.

Elementary Manual of Building Inspection, or, How to Become a Building Inspector. By WILLIAM R. PURCHASE, Building Inspector to the Borough of Hove. (London: Crosby Lockwood & Son. 1908.)

VERY little information is given in this book as to the steps to be taken by anyone who wishes to become a building inspector—probably for the simple reason that there is very little to be said on the subject. The value of the book is its usefulness to the man who is a building inspector. It is a difficult matter to compress into 128 pages all the information required by such an official about Acts of Parliament, by-laws, building construction, and sanitation, but the author has certainly done remarkably well. The compiling of such a book is like the compiling of an anthology: no one is satisfied, not even the compiler. Some things are included which ought—the critic thinks—to have been omitted, and some are omitted which the critic would have inserted. For example, a suitable water supply is usually demanded before a building will be certified as fit for occupation, but the author does not say a word on this important subject, although a section of the book is devoted to the duties of the inspector on receipt of the "Notice of Completion" from the builder. Two or three small errors and discrepancies have crept in: on page 79, "incombustible" ought to be "combustible"; on page 77 it is said that, for fixing slates, copper nails "are the best, and should always be used for good work"; but on page 81 we are told that "composition nails should be used for best work"; the old error about pitch-pine being the timber obtained from the *pinus rigida* is repeated on page 63. These are trifles which will, no doubt, be corrected in the next edition. The author deals with the duties and qualifications of building inspectors, the construction of foundations, walls, floors, and roofs, plastering, drainage, and sanitary fittings, and much useful information is given in the form of "Memoranda" at the ends of the chapters on the different trades, and in an appendix. We can recommend the book as a well-written manual which cannot fail to be of use to building inspectors.

Baldwin on Heating, or Steam Heating for Buildings Revised. By WILLIAM J. BALDWIN, M.Am.S.C.E. Sixteenth Edition, revised and enlarged. (New York: John Wiley & Sons; London: Chapman & Hall. 1908.)

NEARLY thirty years have elapsed since the first edition of this work appeared. The latest edition is a volume of 404 pages, with 125 illustrations in the text, and fifteen plates. It contains much new matter, and can be recommended as an excellent practical treatise on the ordinary methods of heating by high-pressure, low-pressure, and exhaust steam. Little or nothing is said, however, of the various vacuum systems, which have been so often used in recent years. The first chapter deals with "Gravity Circulating Apparatus," and describes the four systems of low-pressure steam piping in general use. It is followed by two chapters on radiating surfaces, nine on boilers and their accessories, one on air-valves for radiators, two on steam-pipes, three on steam and air, four on heating by high-pressure and exhaust steam, two on boiling, cooking, and drying by steam, and ten on various details of steam-heating apparatus, etc. The author has restricted himself to the subject of what we may call direct heating by steam, and does not deal with those indirect systems in which steam is used in connexion with a hot-water heating apparatus.

It is a matter for regret that a proper index has not been prepared; the so-called "Index" printed at the end of the book is merely a table of contents. In the revision of the book some expressions have escaped the author's notice; on page 318, for example, there is a reference to "Mr. Thomas Tredgold," as a writer on heating "early in the present century."

Practical Steam and Hot-water Heating and Ventilation. By ALFRED G. KING. (London: Crosby Lockwood & Son; New York: The Norman W. Henley Publishing Company. 1908.)

IN this volume of 404 clearly-printed pages Mr. King has given an admirable account of modern American methods of heating and ventilation. By far the greater part of the book is devoted to heating by means of hot-water and steam, and it is interesting to note that the system of low-pressure hot-water heating, which has always been the more popular in this country, is now in America superseding the system of heating by steam for all except the largest buildings.

Although American methods do not differ materially from British methods, there are some modifications in detail which will be of interest to readers on this side of the Atlantic. The chapter on vacuum systems of heating by steam is a case in point. There are two chapters only on ventilation, and the more important of these deals almost entirely with mechanical methods. To the practical man the fact that the book is not overburdened with intricate formulas and elaborate tables, will be a point in its favour; the few rules which are given are of a simple kind, but are sufficiently accurate for practical purposes. Apart from one or two passages, such as the mistake on page 19 about the method of heat-transfer to and from radiators, and the reversal on page 23 of the author's meaning as to the relative efficiency of the several methods of heating, the book is admirably written. There is little or no padding. The illustrations, upwards of 300 in number, are very clear, and include nearly every detail of steam and hot-water heating systems; and a full index completes the volume. To British architects and engineers the book will be as useful as to their American brethren.

The Theory and Practice of Bridge Construction. By MORGAN W. DAVIES, A.M.Inst.C.E., M.Soc.Ing.Civ. de France. (London: Macmillan & Co., Ltd. 1908.)

THIS work is based upon the lectures delivered by the author to students of civil engineering at the Swansea Technical College. The earlier chapters deal almost exclusively with stresses in beams and trusses; bending moments; moments of inertia and resistance; the strength and fatigue of timber, iron,

and steel; the strength of columns; the deflection of beams; and kindred subjects. Among these chapters the reader will find all necessary information on the design of girder bridge spans, cantilever bridges being specially considered in Chapter V. The masonry arch, although not coming within the scope of the treatise, is discussed in the early part of a chapter devoted to "Arches." Suspension bridges, drawbridges, transporter bridges, and bridge floors are next taken up; and the work concludes with examples explaining in detail how various types of bridges should be designed. The book is one which should be much appreciated by engineers and students who desire simple and trustworthy means of arriving at reliable results without laborious calculations involving the use of higher mathematics. The illustrations are clear, and in many cases have been reproduced from actual working drawings.

Timber. By J. R. BATERDEN, A.M.Inst.C.E. (London: Archibald Constable & Co., Ltd. 1908.)

NOTWITHSTANDING the important part played by steel and reinforced concrete in modern construction, timber is in great demand throughout the world, and will probably remain popular for many years to come. As Mr. Baterden points out in this work, immense quantities of wood are being used for street paving, the manufacture of paper, and other purposes of comparatively recent origin. The effect of these new uses upon the world's available supplies of timber may be realised from the statement that the quantity of paper required for the average circulation of a popular daily halfpenny newspaper involves the destruction of 200 trees. After discussing the nature and properties of timber in general terms, the author gives some statistics relative to the world's forest supply, the quantities of timber used in different countries, and the timber imports of Great Britain. This chapter deserves careful study, and supports in unmistakable fashion those who advocate the adoption of systematic tree cultivation in the United Kingdom. Following the introductory matter come several well-illustrated chapters describing in detail the varieties of timber produced in the chief countries of the world, the result being what we may term a descriptive catalogue of great practical value to timber users of every class. There are several chapters dealing with causes of decay, seasoning, preservation, defects, strength, and testing; these, as well as their predecessors, bearing the imprint of laborious compilation and discriminating choice. The book is the best guide to timber that we have seen, and every timber-user should possess a copy.

A Text-Book of Theodolite Surveying and Levelling. By JAMES PARK, F.G.S., M.Inst.M.M., Professor of Mining, and Director of the Otago University School of Mines. (London: Charles Griffin & Co., Ltd. 1908.)

SURVEYING is a subject which can scarcely be said to have been neglected by writers, and it may even occur to some that an additional text-book is not wanted. While rather inclined to the same view, we do not overlook the merits of Professor Park's last work, which deals in a concise and simple manner with the elements of surveying and levelling. Most of the problems stated are solved in the form of fully-worked examples taken from records of actual field experience, and as the subject-matter includes chapters on "Railway Curves" and "Mine Surveying," the book is of wide applicability. As an introduction to surveying and levelling it can be recommended with confidence to civil engineering and mining students, as well as to candidates for examination as land surveyors in the United Kingdom and the Colonies.

Practical Sheet and Plate Metal Work. By EVAN A. ATKINS., A.M.I.Mech.E. (London: Whittaker & Co. 1908.)

THERE are few books dealing in a complete and helpful manner with the numerous branches of sheet and plate metal work entering directly and indirectly into architectural practice. Mr. Atkins, who is the head of the Metal Trades Department in the Municipal Technical School, Liverpool, has treated the subject with a special view to the needs of the practical man, but we are sure that his work will be appreciated equally by architects and draughtsmen. A very commendable feature is the excellent series of drawings illustrating the letterpress, all the patterns being set out just as they would be in the workshop, many useful hints being also given as to the use of tools and the proper manipulation of the material. Among the chapters which may be singled out for the special attention of architects are those on "Roofing Work," "Ventilator and Chimney-pot Bases, Hoppers, etc.," "Sheet Metal Joints," and "Riveted Joints."

The Building Mechanics' Ready Reference. Plumbers', Steam Fitters' and Tinners' Edition. By H. G. RICHEY, Superintendent of Construction U.S. Buildings. New York: John Wiley & Sons. (London: Chapman & Hall. 1908.)

IN this book the author presents a valuable collection of notes and data on warm air, steam, and hot-water heating, water services, drains and sewers, sheet metal work, and gas fitting. Unfortunately, much of the tabular information is of no practical use to British readers because it refers exclusively to apparatus and fittings made in the United States, and states various dimensions, such as thickness and capacity, in accordance with American standards and gauges. A genuine British edition—not merely a reprint of what has been prepared for the American public—would be appreciated in this country to a far wider extent than the present volume. This is a point which British publishing firms would do well to take into account when considering the reproduction of American reference books on this side of the Atlantic.

The First International Road Congress Paris, 1908. By G. MONTAGU HARRIS & H. T. WAKELAM, M.Inst.C.E. (London: Wyman & Sons, Ltd.)

ALL who are concerned in the construction, maintenance, improvement, and administration of roads will welcome the issue of this Report, which places on record in convenient form the experience of engineers, surveyors, and others representing the chief countries of the world. The book is of convenient dimensions, and expresses in concise terms the resolutions of the Congress and numerous detailed suggestions offered by members.

British Rainfall, 1907. By HUGH ROBERT MILL. (London: Edward Stanford. 1908.)

WE are glad to find in this volume ample evidence of the increasing work conducted by the British Rainfall Organisation—a living monument to the memory of its founder, the late Mr. G. J. Symons. The present report commemorates the jubilee of the organisation, and is the forty-seventh annual volume, giving the results of laborious and invaluable observations made throughout Great Britain.

Logarithms for Beginners. By CHARLES N. PICKWORTH, Wh.Sc. Second Edition. (London: Whittaker & Co.; Manchester: Emmott & Co., Ltd. 1908.)

THERE is very little fresh in this elementary treatise, whose successful career has confirmed the favourable opinion we expressed concerning the original edition.

Woodwork for Schools on Scientific Lines: A Course for Class Work or Private Study. By JAMES THOMAS BAILY, Headmaster, St. Albans Technical School, etc.; and S. POLLITT, B.Sc., Headmaster, Southall County School. Part II. (London: John Murray. 1908.)

THIS little book of forty-six pages is more suitable for class work than for private study. It contains twenty lessons, each of which (with one or two exceptions) aims at promoting the student's efficiency in three directions—drawing, benchwork, and knowledge of materials, etc. Thus, the first lesson, on an "Oxford" picture-frame, calls for a drawing of the frame to scale, and a perspective sketch of the joint, then for the making of the frame in walnut; and, thirdly, for answers to questions about walnut-trees and window glass. No information in answer to the questions is given in the book; the student must, therefore, obtain it from other books or from the teacher.

There are also twenty lessons on drawing and benchwork only. All the objects described in the lessons are clearly illustrated. The method adopted by the authors is certainly calculated to make the lessons interesting, and we have no doubt whatever that the book will prove useful in technical schools.

Chip-Carving and Other Surface-Carving. By ELEANOR ROWE. (London: B. T. Batsford. 1908.)

MISS ELEANOR ROWE'S new book on chip-carving is a welcome addition to her other works on wood-carving. One of these, "Hints on Chip-carving," has run out of print, and the present volume is an extended edition of it. The author has specially considered the needs of those who undertake the work at home without a master. The chapter on wood and tools and geometric patterns is specially written for these.

The term chip-carving is rather an unfortunate title to apply to one of the first and most primitive forms of decoration applied to wood. The incised or surface-carving of wood known as chip-carving is a shallow all-over treatment of the wood, leaving no flat surface, but a number of sharply-cut facets usually arranged in geometrical patterns. Miss Rowe calls them "V" channels though they were originally done with a knife. It may be said at once that the only interest attaching to this form of decoration is the fresh and spontaneous effect obtained by the old carvers. The present-day multiplications of tools and appliances are a positive disadvantage to the art. Miss Rowe rightly points out that the field for this form of decoration is along the lines of the best old work, particularly in its free application of ungeometric patterns.

The value of this little book is not only in Miss Rowe's experience as a teacher and writer on the subject, but in the collection of photographic illustrations of the old art.

Grammar of Lettering; a Handbook of Alphabets systematically arranged for the use of Art Students, Architects, Decorators, Sign-writers, and all classes of Craftsmen. By ANDREW W. LYONS. (London: Maclaren & Co. 1908.)

THOUGH we do not think that this work possesses as wide an appeal as is claimed for it, yet the enthusiasm with which the author has approached the subject must render it a useful text-book to the sign-writer, for whom, in particular, the treatise was intended. Mr. Lyons gives a timely warning against the adoption of eccentric forms of lettering; often, as he points out, the outcome of ignorance of the principles of letter design on the part of the craftsman.

Though the subject does not properly come within the province of the architect or the art-student (whose lettering is mainly done by the pen or the chisel), to the class to whom it is addressed it should prove a work of great utility.

Decorators' Symbols, Emblems, and Devices. By GUY CADOGAN ROTHERY, with original designs by E. FLETCHER CLAYTON. (London: The Trade Papers Publishing Co., Ltd.; New York: The "Painters' Magazine." 1907.)

"DECORATORS' SYMBOLS, EMBLEMS, AND DEVICES," by Mr. Guy Cadogan Rothery, is the fourth volume of the "Decorator" series of "Practical Books." One gathers that this series of handbooks is addressed rather to trade apprentices than to art students. The present volume contains a great deal of information useful in every branch of decorative work. An accurate knowledge of the symbols or emblems sanctioned by historical tradition is essential to the operative artist as well as to the designer if he is to be a master of his work. Colour as well as form has its significance, while all decoration was in its early stages symbolic within clearly defined limits. Mr. Rothery deals very thoroughly with his subject, and the text is greatly helped by the clever pen drawings of Mr. Fletcher Clayton.

Cassell's House Decoration. A Practical Guide to Painters' and Decorators' work. With 835 illustrations and twelve plates. Edited by PAUL N. HASLUCK. (London: Cassell & Co., Ltd. 1908.)

THIS work forms one of a series of technical manuals issued by Messrs. Cassell & Co., and the same high standard of reliability is maintained as was shown in former volumes of the same series. The information has been furnished by experts in each particular branch of practical decorators' work. The sections on painting, distempering, wall-paper hanging, etc., cannot fail to be valuable as well to the architectural student as to the craftsman. We regret that we cannot give the same unqualified praise to the examples of original designs. There is a reason, and a very good one, for placing the lock-rail of a door nearer the bottom than the top; one or two of the designs here given show the handle at the eye-level. As a practical text-book of house decoration, this book should not fail to meet with the appreciation which it deserves.

Where to Live Round London (Northern Side). Compiled by FREEMAN BUNTING. Second Edition. (London: The Homeland Association. 1908.)

WE have before noticed the first edition of this very useful publication, which gives information as to house accommodation, water supply, rates, railway fares, and the general nature of the district, for places situated at a distance of from ten to thirty miles from the nearest terminal railway stations. Maps of the principal railway systems are added, and Mr. O. A. Shrubsole, F.G.S., supplies an article on the geology and subsoils of the district dealt with. A corresponding book has been issued on the district on the southern side of London.

MAGAZINES.

THE *Nineteenth Century* contains a very wise article on "Unemployment from the 'Unemployed' Point of View," by Mr. T. Good. His main argument is that the root cause of unemployment is the unprogressive character of our native industries. "Whilst in other countries—countries no more favoured by Nature than we are—we find agriculture and manufactures growing side by side, and employment increasing, here we have agriculture withering and manufactures failing to grow. The result is that we starve, pauperise, exile, and drive to suicide more willing workers than any other country." The author draws a distinction between those whom he calls the genuine unemployed and the sham unemployed, and asserts that it is only of the latter that the Charity Organisation Society and other philanthropic bodies have any direct knowledge. He says—"I am personally acquainted with as many working men as anyone, but I have never yet known a first or even a second rate working man parade himself before a public relief committee"; a statement we are quite prepared to accept, and which is in accordance with our own knowledge as far as it goes in this matter. We will quote his final paragraph in full:—

"In my opinion the one and only practical remedy for unemployment—there is no absolute cure—is the expansion of our productive industries through land reform, tariff reform, mining royalty reform, and transit reform; and the most practical method of relieving the sufferings of the victims of unemployment is by compulsory insurance. To these two remedies might be added labour exchanges in order to avoid the weary and exhausting tramp of the unemployed from shop to shop; the Workmen's Compensation Act might be so amended as to stop the elimination and consequent unemployment of elderly and delicate men; the casually employed young men and youths should be encouraged to indulge in military training in their spare time; and the employment of British labour on British ships should be subsidised. By these means we could confine unemployment within reasonable limits, and benefit the real unemployed, while the sham unemployed and the unemployable could be handed over to the prison and Poor Law authorities."

The *Art Journal* contains an article on what, as far as we know, is a new subject for an artistic periodical—"Buttons." Considering how extensive is the use of buttons, their possible artistic treatment is quite worth taking into consideration. Mr. R. L. B. Rathbone, who writes the article, gives a great number of illustrations of the treatment of the button in different countries. The "Old Dorset Thread Buttons," simple as they are, are in very good taste; the Old English cut steel examples hardly so good. Some examples of ancient Egyptian buttons are given. The best of the more modern examples are the group from Norway and Spain. Some of the "Regimental" buttons have considerable merit also. Mr. E. C. Clifford contributes an article on "Selborne," accompanied by some of his beautiful drawings of trees and landscape; the original of one of these, "Selborne from the Hanger," is in the Institute of Water-colours Exhibition. The mighty trunk of "The Selborne Yew" makes a beautiful study.

The *Architectural Record* (New York) publishes this month a "Bank number," consisting entirely of illustrations of Banks, with an article on "Recent Bank buildings in the United States." The illustrations make a very interesting set, and show a great deal of fine and dignified architecture, nearly all of the Classic type, which somehow seems by common consent to be considered to lend itself naturally to Bank architecture. Some few of the Banks are of the "high building" type, but these are exceptional. There is an exception of a better kind in the "National Farmers' Bank" at Owatonna; a low square block with a large cornice, and an immense mass of solid wall treated with structural polychromy to a slight extent, and with a large semicircular heavily barred window in the centre of each face. This seems to be really an attempt to evolve an architectural treatment suggested by the nature and objects of a Bank. Mr. Louis H. Sullivan is the architect. There are some fine interiors among the illustrations.

Neither the *Berlin Architekturwelt* nor the *Architektonische Rundschau* present this month anything for special comment, except that the latter contains an essay on "Abstract Ornament in the Development of Modern Art."

The *Illuminating Engineer* contains an article by Mr. J. B. Fulton on "The Illumination of the Church of Santa Sophia," which he describes as "more decorative than effective," the building being not very bright even when all the lamps are lighted. The lighting is by iron and bronze candelabra on long hanging rods, supporting many glasses filled with oil, in which floats a wick attached to cork. It sounds rather primitive. Mr. G. E. T. Middleton contributes a very commonsense article on "The Internal Lighting of Churches." The same subject is also treated by "An Engineering Correspondent," who in the course of his article remarks on the fact that some people seem desirous "to secure the improved conditions of illumination to be obtained from modern sources, and yet to imitate the relatively feeble ancient devices"; and he gives an illustration of a bank of imitative candles consisting in reality of small metallic filaments, as to which he rather naively remarks—"This is an interesting example of the desire to reproduce ancient conditions, but one would like to hear fuller confirmation of the correctness or otherwise of the artistic principle here involved." As far as this journal represents architects, we can assure the writer that the imitation of candles in electric lighting is a silly and absurd sham, with no artistic principle of any kind to recommend it.

In *Concrete and Constructional Engineering* the new General Post-Office buildings are described and illustrated by numerous photographs of noteworthy structural details. Dr. Cecil H. Desch, Mr. H. Kempson Dyson, and Dr. John S. Owens give further instalments of their serial articles on "Testing Laboratories for Concrete and Cement," "Concrete Block-making," and "Concrete Making Machinery"; and the same issue contains the usual selection of paragraphs and notes on new uses for and new works in concrete.

The *Contemporary* contains a very amusing article, under the signature "Eulenspiegel," on "German Art and the Emperor"; a sketch of the position, and of the manner in which the Emperor has attempted, and is still attempting, to impose his own views of art on the German public and the German artists. We have nothing like this in England. It appears to us that there is a good deal of excuse for the Emperor's feelings, though not for his action—at least not from the point of view of a strictly constitutional country. The Emperor is entirely opposed to "modernism" in art; and when we consider what "modernism" in German art amounts to, in many of its manifestations, one can hardly wonder at it. We should gather that the Emperor's personal taste in art is really a very sane and sound one; the mistake is in thinking that he has a right to impose it on others, and to expect architects and sculptors to design after his pattern.

Scribner contains an illustrated article by Mr. William Walton on the decorative paintings in the Carnegie Institute, Pittsbarg, by an American artist, Mr. Alexander. The paintings are in a colonnaded gallery on the upper floor, surrounding the grand staircase. It seems to be a finely-planned interior, and the paintings, as illustrated here, have a great deal of vigour of design, though they seem rather scattered in line as compositions. Under "The Field of Art" is an article on "Some Examples of the English School at the Metropolitan Museum of Art," by Mr. Frank Fowler. The examples illustrated are by Crome, Reynolds ("Sir Henry Vane and His Guardians"), and Lawrence. We are glad to see that the writer has a good word to say for Callcott as a landscape painter—an artist whose works are too much overlooked now.

The *Century* has an article on "Reminiscences of Saint-Gaudens," chiefly his own written reminiscences, edited by his son.

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LOCKWOOD'S

Builder's Price Book for 1909.

A Comprehensive Handbook of the Latest Prices. By FRANCIS MILLER, A.R.I.B.A. Containing also the **LONDON BUILDING ACTS, 1894 to 1905,** BY-LAWS, etc., and FULL NOTES OF ALL IMPORTANT DECISIONS in the SUPERIOR COURTS, by A. J. DAVID, LL.M.

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